Fall 1987 Vol. 20/no. 2

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ROTUNDA

the magazine of the Royal Ontario Museum

TRAVEL BY MAMMY WAGON
Sierra Leone

DARTNELL'S HARROWING JOURNEYS

DIAMONDS

XU BEIHONG
Art of modern China

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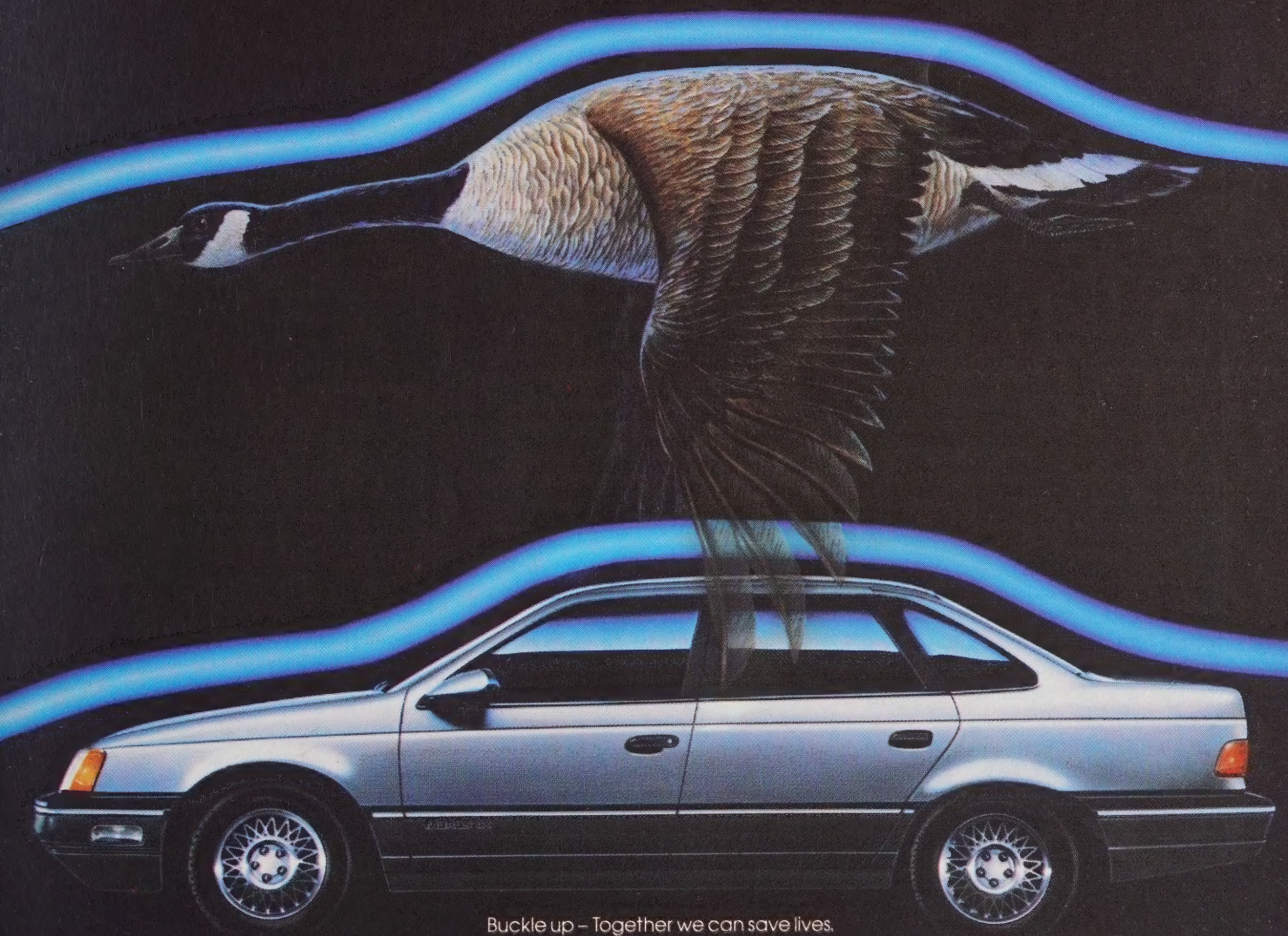

Buckle up – Together we can save lives.

Of mammy wagons, coelacanths, and things

In this issue of *Rotunda* we learn about the hazards of travelling through modern Sierra Leone and 19th-century Canada, the chance discovery of an ancient species of fish, modern art in China, and that most popular of gems, the diamond.

The two teenagers pictured on the cover were selling soft drinks to some patient, and probably more impatient, passengers waiting to travel to their various destinations in the highly decorated trucks, vans, and sedans known in Sierra Leone as mammy wagons. Anthropologist Jeanne Cannizzo describes the mammy wagons as more than just the grass-roots transportation system of this African nation. Their colourful slogans and illustrations tell as much about the aspirations and life styles of modern Sierra Leoneans as the more traditional art works reveal about their ancestors.

Travelling by mammy wagon can be both hazardous and extremely unpredictable, but probably no more so than was travel by ship in 19th-century Canada. George Russell Dartnell, a British surgeon, watercolourist, and gentleman, certainly did not expect to encounter the death-defying events that affected him and members of the Royal Regiment of Foot while travelling under peaceful conditions. On the positive side, however, Dartnell's journeys of 1843 provided him with material for a book, which he published in England in 1845. Honor de Pencier recounts Dartnell's harrowing experiences, through excerpts from the book and from some of his paintings, which he produced even under the most trying conditions.

And speaking of the unexpected, the discovery of living coelacanths, a species of fish that was thought to have been extinct for more than sixty-five million years, caused quite a stir in the international scientific community. Mary Burridge-Smith of the ROM's Department of Ichthyology and Herpetology describes this unusual animal. When one considers that most of the great discoveries of the last decades have concerned outer space, the coelacanth story is a good reminder of what we don't know about our own planet.

Xu Beihong (1895–1953), one of the pioneers of modern Chinese art, was somewhat like the drivers of the mammy wagons; westernization meant taking what was useful and compatible to the ways of his own culture rather than blotting out that culture. Therefore when he went to study in Paris and Berlin in the decade following World War I, it was not the radical art movements of the turn of the century that inspired him but rather the art of the Renaissance, Rembrandt, and 19th-century France. As art historian Ka Bo Tsang explains, Xu revitalized Chinese painting by introducing a more naturalistic and realistic approach to the subject.

Finally, on the topic of objects that are beautiful to behold, the ROM could not celebrate its seventy-fifth anniversary without displaying diamonds, the most popular symbol of this occasion. Some spectacular diamonds were included in the exhibition *Eye of the Beholder: Objects for Personal Adornment.* Peta Daniels, the organizer of this show, writes about these beautiful gems, which may or may not be "a girl's best friend" and, in the 20th century, have had an important role in hi-tech.

From the grass roots of Sierra Leone to the most endurable of gems, we hope that you enjoy reading this issue of *Rotunda.*

S.S.

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ROTUNDA

the magazine of the Royal Ontario Museum

Volume 20, Number 2, Fall 1987
(Date of issue: August 1987)

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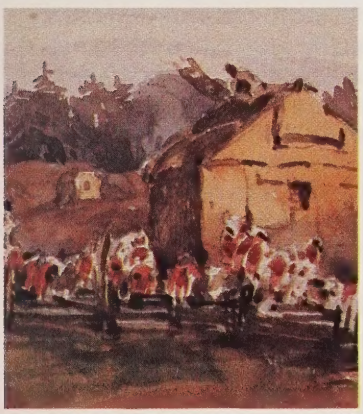

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Two teenagers sell soft drinks to travellers who may wait up to five hours for their mammy wagons to depart. This is one aspect of travel in Sierra Leone. For the whole story, turn to page 34. Photo by David Stafford.

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Published quarterly by the Royal Ontario Museum.
© The Royal Ontario Museum, 1987
Printed and bound in Canada
Indexed in the *Canadian Periodical Index*
ISSN 0035-8495
Second class mail registration number 1531

Subscriptions and Single Copy Sales
Subscriptions $12.00 (4 issues), outside Canada add $4.00 for postage and handling; single copies $3.50
All circulation and subscription inquiries should be addressed to *Rotunda*, 511 King Street West, Suite 100, Toronto, Ontario M5V 2Z4, or telephone (416) 591-1381

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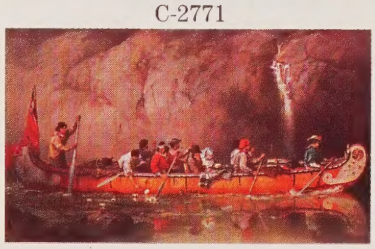

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Letters to the Editor

Editor coerced?

With regret, I am writing to express my dismay on reading the spring issue of *Rotunda* (Volume 19, number 4). To me, *Rotunda* is a semi-scholarly magazine that is able to draw on the skills of world-renowned curators and technical experts for most of its articles.

The inclusion of a major article on "marketing" the Museum seems to be totally out of place and I wonder whether you wrote and included it of your own free will.

Do you really believe that the inclusion of the article will enhance the ROM's image? I do not.

JOHN H. MICHELL
TORONTO, ONTARIO

(The stubborn and aggressive nature of the executive editor would make it virtually impossible for her to write or publish an article unwillingly.

The tasks of introducing and promoting the ROM to new audiences and in turn raising funds from these people as well as from our established audience requires a great deal of skill. The future of the institution—and, of course, the quality of its research and collections—now depends on the skills of its curators and technicians, but the public's genuine show of support is also essential. When the ROM decided to market itself in an original and very appropriate way, it was the perfect time to draw attention to another real part of modern museology. Surely the ROM's initiative in establishing an endowment fund and the imaginative way in which money is being raised for this fund can only enhance the Museum's image.

ED.)

More in-depth studies of Lake Baikal

In the winter issue of *Rotunda* (Volume 19, number 3) a reader takes issue with Gerald Durrell's statement that Lake Baikal is "the largest body of fresh water in the world." How does one define "largest" with respect to lakes? Does it mean the surface area or the volume of water ("body")?

The small but impressive museum in Irkutsk, at Lake Baikal, contains a three-dimensional model of the lake, built to scale in clear plastic, illustrating many of its unique features. There is also a tabulation of the dimensions and volumes of the major lakes of the world. Assuming these figures to be correct, Lake Superior, in spite of its greater surface area, contains less water than does Lake Baikal.

If we concede that a two-litre container is "larger" than a one-litre container because it can hold a large "body" (volume) of liquid regardless of its shape, then surely this same criterion is valid when determining "the largest body of fresh water in the world."

WM R. SINCLAIR
WESTON, ONTARIO

Noble Rot: The chateau or the wine?

I wonder how many wine buffs will write to you to pick a very small nit in the article about noble rot by Barbara Ritchie (Volume 19, number 3). The chateau, according to Hugh Johnson's *World Atlas of Wine*, is simply Yquem, but the wine is labelled "d'Yquem."

The references in the article were to the chateau rather than the wine so the "d'" should not have been used. At its best, "Chateau d'Yquem" can be so fine that in the famous (although now considered out-of-date) 1855 classification of the Bordeaux wines, it was classed "First Great Growth." According to Johnson, this was "a rank created for it alone in all Bordeaux."

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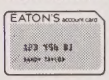

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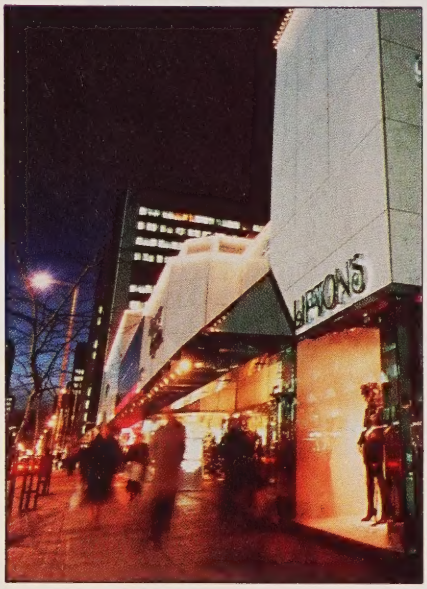

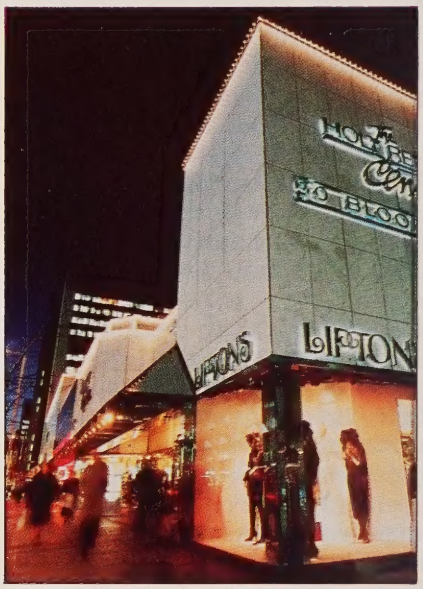

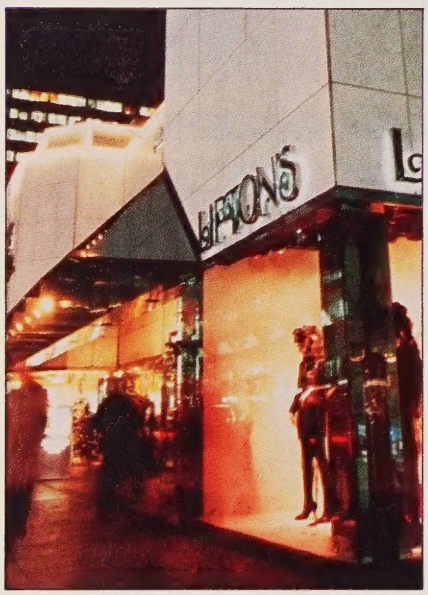

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Getting to grips with the world: Those astounding geckos

Geckos, which exist on all continents and major islands between the Arctic and the Antarctic circles, may be frequently found, but they are quite exceptional animals. The remarkable structure of the feet of many species of gekkonid lizards and the unusual behaviour that this structure permits have long been a subject of particular interest for natural historians and scientists. Georges-Louis Leclerc, comte de Buffon, the noted French naturalist and author, expressed at the close of the 18th century what now would be considered outlandish views when he wrote:

> Even the contact of the feet [of the gecko] is attended with great danger, and, according to the report of voyagers, renders poisonous such articles of food as it happens to tread upon. . . . Hasselquist asserts that the toes of this terrible lizard give out a poisonous liquid, and that it is very apt to run over any substance that is impregnated with sea salt, on which it leaves a very dangerous poison. He saw three women at Cairo, who had very nearly lost their lives from having eaten some cheese lately salted, on which a gecko had deposited its poison. He was further convinced of the corrosive nature of the fluid which oozes from the feet of this animal, by having seen the hand of a person over which a gecko had run, when he was attempting to catch it; every part that had been touched by the feet of the lizard was covered with small, hot, fiery pimples, like those produced by nettles.

While notions such as these are no longer entertained, the fact remains that different species of these lizards can scale such diverse surfaces as rocks, glass, walls, tree trunks, and leaves, and can travel head-up, head-down, or laterally along vertical surfaces. They can even travel upside-down. These are accomplishments that we may associate with flies and other insects but rarely with vertebrates. However, research has enabled us to better understand how geckos can be so versatile in their movements.

To scale a surface, geckos are able to use the expanded regions of their feet, known as toe pads, for gripping. The pads consist of one or more plates that bear on their exposed surfaces a field of microscopic outgrowths known as setae. The setae are composed of keratin, the same material of which our hair is made, and each seta has broadened, flattened, recurved free ends. There may be one or more free ends on each seta, and a total of up to one million setae on the animal's four feet. The setae are able to withstand considerable pull along their length.

It has been observed that the animal's grip is stronger on highly charged and irregular surfaces. This indicates that the feet maintain their hold by a combination of electrical attractions and minute, spontaneous movements to position and reposition the setae so that they can mesh with the surface irregularities. The latter series of movements can be compared to the unconscious and spontaneous adjustments that our bodies make when we maintain our balance while bicycling. Some species have no claws and rely totally on the setae for maintaining a surface grip.

Because the setae are very delicate, their application to and release from surfaces must be carefully controlled. Animals that use claws to climb apply the claws to a surface from the first to the last moment of

In this ventral view of a Moorish gecko (*Tarentola mauritanica*) resting on a pane of glass, the radiating form of the toes and the toe pads are visible.

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The radiating form of the toes and the toe pads can be clearly seen from this ventral view of the left hind foot of a tokay gecko (*Gekko gecko*).

PHOTOGRAPHY COURTESY A. RUSSELL

A scanning electron micrograph shows the adhesive setae of the tokay gecko (*Gekko gecko*).

contact in order to maintain the grip for the longest possible time. Geckos with toe pads reverse this pattern. The toes are rolled down to contact a surface starting from the base, so that if there is a claw, it is the last part of the toe to make contact. Muscles pull on the fixed ends of the plates of the pads in order to ensure a snug contact with the surface. Conversely, when the toe is lifted from the surface, the movement starts with the claw or tip and continues to the base. This procedure, which is known as hyperextension, allows rapid and controlled movement.

Geckos' feet are also designed to prevent the skin from either buckling or being stripped away when it is used as an adhesive and from stretching uncontrollably when subjected to the weight of the animal. A skeleton of collagen, a tough, fibrous protein, is found on the internal face of each plate in the toe pads. The collagen is woven into bundles that connect with the animal's main skeleton at a point that is like the joint between the fingers and the palm of the human hand. The interskeletal links are very tight, and this prevents the skin from stretching more than is necessary to allow the setae to make the best contact with a surface.

The strength of the grip of a foot depends upon the number of setae that can make adhesive contact with a surface. In order to function well, therefore, the individual plates must be able to deal with surface irregularities. This is accomplished by highly developed circulatory systems which turn the basal part of each plate into a fluid-filled cushion. The cushion of one plate presses down on the setae of the adjoining plate. Pressure within each circulatory system is controlled from a central reservoir, known as a sinus, in each toe.

It takes more than a good grip to allow geckos to travel with ease. Their toes are spread so far apart that they can radiate to encompass more than a semicircle. This is due to internal modifications of the skeleton of the feet. The ability to radiate the toes so extensively permits greater flexibility in the positioning of the toe pads, and it also permits at least one toe on each foot to be aligned vertically with the force of gravity regardless of the direction in which the animal is travelling. Because a single toe is capable of supporting the entire weight of the animal, there is a large margin of safety.

Walking upside down or at an angle along vertical surfaces appears, at first sight, to be an odd but easily performed movement for geckos. In fact, this type of movement is very complex, the more so because there are no glandular secretions as there are in animals such as tree frogs. Through modifications of their typically dry and scaly reptilian skin, geckos are able to move in astounding ways.

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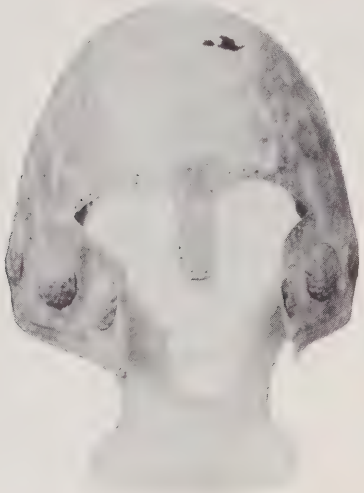

ROM conservators questioned the authenticity of this helmet.

An authentic Corinthian helmet (*left*) has a very different shape from the questionable helmet (*right*).

Though judgements based on intuition are considered neither scholarly nor scientific, intuition can serve as a catalyst for research that is academically sound. Such a case arose when I began to clean a so-called debased Corinthian-style bronze helmet bought by the Museum in 1909—one of several helmets being prepared for display in the new Greek galleries.

Although my sixth sense told me that it was not a proper helmet, this was no basis upon which to assess authenticity. Concrete evidence was needed; and so I began the detective work that would also involve other conservators, as well as curators of the Greek and Roman Department.

One of the ways we decide if an archaeological bronze is genuine is by assessing the nature and composition of the corrosion. The corrosion products on our helmet—copper oxides, carbonates, and chlorides—were typical of archaeological bronzes, and they were in the correct sequence. They also felt right as they were removed; the rapidly induced corrosion found on fakes yields products that are less compact than those that have developed naturally.

I was wondering if my suspicions were groundless when I noticed that the geometric border design came to an abrupt end at the front of the helmet, as if it had been interrupted. The decorative borders on Corinthian helmets tend to follow the entire perimeter, including the sections bordering the eyes, nose, and cheeks. Furthermore, the traditional techniques for creating decorative metalwork—tracing, engraving, punching, repoussé, chasing, and stamping—had not been used; instead, the decoration on this helmet appeared to be produced on a lathe. Corinthian helmets, with few known exceptions, were produced from a single sheet of bronze that was raised and worked into shape. Yet this helmet was most likely spun on a lathe and hand finished—a typical method of pro-

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There were other inconsistencies of design. The floral bosses attached to each cheekpiece were incorrectly positioned for the purpose of deflecting blows to the head. On this helmet they may only have been intended as decorative elements, yet there are no other known examples of purely decorative helmet bosses. After about the 5th century B.C., Roman battle helmets were generally made of iron, and the Corinthian-style bronze helmet was modified for ceremonial purposes to a cap that appears to have been worn tipped back on the head. However, the overall shape and extension of the cheekpieces of our helmet would have made it impossible to wear in this way. Then I discovered that the bosses on our helmet were soldered rather than riveted in place, and that the soldered material inside each cheekpiece had been shaped to resemble a rivet, as well as painted to look corroded.

My doubts about the helmet's origins continued to grow. Examination of the edge around the eyes, nose, and cheekpieces, revealed a thin, uniform layer of dirt that appeared to have been painted on. When the dirt was cleaned away from the edge, the metal was shiny and uncorroded, suggesting that it had been cut after the rest of the helmet had already become corroded. And when the nosepiece was cleaned, it was found to be made of copper, a replacement for a bronze original.

Corinthian soldiers laced a leather or linen cap into their helmets through a series of holes that ran around the helmet's perimeter, flush with the surface. The holes of our helmet did not continue around the perimeter, but stopped for no obvious reason at the front corner of each cheekpiece. When more of the artificial dirt was removed from the helmet, the holes were found to have raised, irregular edges. This feature combined with the sweat of the wearer would have certainly cut the laces far too easily to be practical.

The "helmet" has now been reconstructed as a vase.

A circular solder mark was found at the crown of the helmet where an elevated crest may have been attached. But a crest in this position would have pulled the helmet off balance when it was being worn.

The overall form of the helmet was also questionable. The proportions did not match any other Corinthian helmets. It was too short and the metal was too thin—only about one-third as thick as the metal of a typical helmet. Instead of being shaped to cup the cheeks for protection, or bent back to signify the death of the warrior who wore it, the cheekpieces of this helmet were turned out; if bent together they would have formed a perfect circle at the base. The helmet did not have a flange to offer any protection for the wearer's neck. In fact it would have exposed the neck in a way that would almost invite attack from the enemy.

With all the evidence casting doubts on the helmet's function as battle armour and as ceremonial wear, we were sure that the Museum did own a bronze archaeological object but we were equally certain that it was not originally a helmet. Then what was it? After many hours of research, we found a photograph of a gladiatorial trophy from Herculaneum, dating from the 2nd century B.C. The similarities were obvious. Instead of a clean helmet, the ROM may now display a reconstructed vase.

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The fortunes of tea

GLORIA VARLEY

A tea shop in Hong Kong

The leaves come in a thousand different shapes. They may shrink and crinkle like a Mongol's boots. Or look like the dewlap of a wild ox. Some are sharp, some curling as the eaves of a house. They can look just as clouds do when they float out from behind a mountain peak. The leaves can swell and leap as if they were being lightly tossed in wind-disturbed water. Others will look like clay, soft and malleable, prepared for the hand of the potter. Still others will twist and turn like rivulets carved out by violent rain on newly tilled fields.

These vivid lines were written in China more than twelve hundred years ago. The subject? Tea. Next to water, it's the most commonly drunk fluid in the world. And before deciding that the descriptions are a touch overblown, think about the terms that winetasters often use to express their passion. Tea, it seems, arouses similar emotions in its devotees.

Though its early history is blurred with myth, it's likely that the tea-drinking habit migrated from Assam through Burma and northern Viet Nam, arriving in China with Buddhist missionaries around 59 B.C. Tea wasn't immediately popular. One author included it under the heading "food to be avoided," warning of insomnia. But by A.D. 600 or so, it had become a fashionable social drink. And by the time the great expert Lu Yu came along with his *Ch'a Ching* or *(Ode to Tea)* in 780, he could reverse the earlier opinion and declare "To acquire blissful sleep, drink tea."

Marco Polo missed out on tea, for when he stayed with Kubla Khan for twenty-three years from 1271, the beverage wasn't drunk at court. The first Europeans to taste tea were Portuguese traders in China in the mid-16th century. Yet it was the Dutch, in 1606 or 1610—depending on which source you consult—who began the import trade. Originally tea was valued for its medicinal properties, perhaps because the pleasant taste we admire wasn't apparent in the rough sort first exported.

Whether the drinking of tea helps or hinders humanity continued to be a subject of argument as its use spread. Advocates hailed it as a universal panacea. Opponents condemned it as a veritable poison. Medicinally, tea had probably come into favour because of its anti-narcotic stimulating effect. Much later, in 1820, when caffeine was isolated from coffee beans and, in 1827, from tea leaves, it was discovered that tea, by weight, contains twice as much caffeine as coffee. Once brewed, however, a cup of coffee delivers twice the caffeine of a cup of tea, because coffee's extraction is more complete. Another point: though identical chemically, the caffeine's *effect* in the two beverages is quite different. By-products produced by roasting cause coffee's caffeine to be absorbed by the body all at once. Polyphenols in tea (usually, though not accurately, called tannins) slow down the absorption rate. The result is stimulation rather than shock, a gentle lift that increases mental alertness without inhibiting sleep.

Scientists are discovering further beneficial aspects of tea. It appears to impede the work of the bacteria that cause tooth decay, possibly because the leaves are naturally rich in fluoride. And tea's caffeine, by constricting blood vessels in the brain, may bring some help to those suffering a hangover headache.

Today *Camellia sinensis*, its relative *C. assamica*, and their various hybrids are grown mainly in India, Sri Lanka, China, Taiwan, Japan, and Indonesia, although significant amounts are provided by several countries in southeast Asia and Africa (especially Kenya), and also by Bangladesh, Turkey, Iran, and

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Argentina. It's sobering to reflect that the world might well be denied the pleasures of tea if it had to be grown only in countries where wages and land values are high. Plantations were started in the United States in the last century, and the plants thrived from Florida to Louisiana and as far north as Tennessee and North Carolina, but the prohibitive cost of land and labour ultimately made commercial production impossible.

Originally, the size of the cups from which tea was drunk was directly related to its cost. When the small handleless oriental cup developed—the ones in the *Ch'a Ching* look remarkably like the cups in Chinese restaurants today—tea was a decidedly expensive commodity, to be consumed thoughtfully, in small quantities. The development of the tea ceremony in Japan caused a modification of the Chinese style of cup, for the Japanese felt its form wasn't aesthetically suitable. Instead they adopted the asymmetrical design of a Korean rice bowl, and the teacup became an object of meditation. Cups with handles were already prevalent in Europe by the time tea was introduced there, so that it was a simple matter to adapt them to this new use. But scorched fingers remained a problem. When the Russians began to use glasses for tea in the 18th century, they solved the difficulty by developing elaborate and beautiful metal holders with handles. Other Europeans turned to the cup plate, developed by English potters around 1800—our present-day saucer. But even Lu Yu had acknowledged the difficulty. He recommended that teacups be placed in lacquered wooden bowls to avoid painful burns.

Altogether there are some fifteen hundred varieties of tea in the world, of three main types: green, black, and oolong. The leaves for green tea are first steamed to make them pliable, then rolled on mats to release flavourful juices, and finally fired to prevent the process called fermentation. Leaves for black tea are wilted or withered in a warm room, then rolled and left to ferment before firing. Oolong, halfway between green and black, is processed much like black tea but not fermented as long. And the familiar term orange pekoe? It indicates no special quality or flavour, nor even a particular type of tea. It's simply a name given to the smallest leaf size of black tea, the two larger ones being souchong and pekoe.

Though we now think of tea only as a drink, some early settlers in New England managed to make it a complete meal. After boiling the leaves furiously to extract every particle of flavour—resulting, no doubt, in a direly bitter brew—they scooped out the stewed leaves and spread them on toast to eat with salt and butter. Drinkers today don't go so far. They're content to enhance the brew by the addition of cardamom pods or orange peel, saffron or peach leaves, mint or other flowers, or fruits and spices. Various methods are employed, from simply slipping a little of the flavouring agent into the pot, to a more elaborate commercial layering of chrysanthemum petals, let's say, with newly fired tea leaves. In yet another variation, lychee trees are sometimes grown alongside tea shrubs so that tea leaves become scented by the lychee blossoms.

Tea drinking—almost ignored in countries such as Spain and Germany—is endemic in England, where it's offered as the eternal solution, come joy or grief. Hong Kong just wouldn't be the same without its tea and dim sum restaurants and the accompanying serious reflection on the merits of a myriad of exotic blends. And North America's contribution to tea culture? The tea bag. It started life in 1908 as an economy measure taken by New York importer Thomas Sullivan. Instead of sending samples in large tins, he began to package them in small silk bags. To his considerable surprise he was swamped with orders for those useful little bags, the one thing that Lu Yu never thought of.

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The Harrowing Journeys of George Russell Dartnell

The ship's pilot was gone and the lookout had fallen asleep. When the weather suddenly turned foul, the passengers and crew of the Premier *were taken by surprise.*

Honor de Pencier

IT wasn't necessary to be an explorer or a soldier to encounter more adventure than one bargained for when travelling by water in Canada in the 19th century. When George Russell Dartnell, a surgeon with the British army, received a posting to Canada in 1835, he probably never imagined that after he returned to England in 1844 he would have a manuscript and watercolours describing first-hand a most unforgettable shipwreck.

Dartnell wrote of three journeys that he made with his regiment, the First or Royal Regiment of Foot, popularly known as the Royals. The first trip, in 1840, involved the movement of the whole regiment of about five hundred men and a few of their families from Montreal to Kingston via the conventional Ottawa-Rideau route, and then on to London, Upper Canada. Whereas this manoeuvre was quite routine, it was the return journey east in 1843, from Toronto to Quebec City via Kingston and the St Lawrence River, and the regiment's subsequent embarkation on the transport ship *Premier* that became the subject of Dartnell's illustrated publication *A brief narrative of the shipwreck of the transport "Premier" . . .* (London: Jeremiah How, 1845).

Wreck of the Premier, 1843, watercolour over graphite, with scraping, 12.1 x 20 cm, private collection

PHOTOGRAPHY BY BRIAN BOYLE

What constituted a routine trip by water in the Canada of 1840? Dartnell's commentary in a manuscript owned by his descendants creates a very clear picture. On 1 May the Royal Regiment boarded vessels, commonly known as bateaux, at Lachine. These boats, which could hold large numbers of passengers, were actually the larger Durham boats in use by the 1830s for both passenger and cargo transportation. Like flat-bottomed

A BRIEF NARRATIVE

OF

THE SHIPWRECK

OF

THE TRANSPORT "PREMIER,"

NEAR THE MOUTH OF THE RIVER ST. LAWRENCE,

ON THE 4TH NOVEMBER, 1843,

HAVING ON BOARD THE HEAD-QUARTER WING OF THE SECOND BATTALION OF THE FIRST OR ROYAL REGIMENT,

PROCEEDING FROM NORTH AMERICA TO THE WEST INDIES.

ILLUSTRATED WITH SEVERAL ENGRAVINGS FROM SKETCHES MADE ON THE SPOT.

BY

GEORGE R. DARTNELL.

THE DRAWINGS IN LITHOTINT BY J. A. HAMMERSLEY.

LONDON: PUBLISHED BY JEREMIAH HOW, 132. FLEET STREET.

1845.

barges, the boats had small decks, and were about twenty-four to twenty-seven metres long and three metres wide. They could be towed by a steamer, pushed along with poles, or hauled by cable from the river bank with or without the aid of a sail. Passengers had to provide their own blankets. On military runs, the officers usually travelled in the steamer while the troops and their families were towed in the open bateaux. On this particular trip, the weather played havoc with their schedule, and they all

> experienced in the short space of a fortnight every variety of season and climate from July to Dec, from Siberia to the torrid zone. The first half of the route from Montreal to Kingston, usually travelled by the Rideau in 4 to 5 days, occupied nine, and was marked by a series of delays and misadventures sufficient to try the temper and patience of Job himself. The embarcation at Lachine was accomplished amidst a drizzley rain.

The Royals' first stop after their departure from Lachine was the Ste Anne rapids at the confluence of the St Lawrence and Ottawa rivers. There they were delayed by a terrific gale. Next they continued up the Ottawa River, but conditions were equally dismal when they reached Bytown (Ottawa). There they were forced to wait for two days in the cold, pouring rain for another vessel, the canal steamer *Hunter*. Surgeon Dartnell's name appears on the list of officers of the regiment, and so he must have been one of the lucky persons to find shelter at an inn instead of having to suffer in the wet bateaux.

> The "Hunter" at length arrived with the 85th [Regiment] going down, and from Bytown the progress tho' slo was uninterrupted except by the tedious lockage of a long line of boats. The weather was generally cold, wet & cheerless but this perhaps in harmony with the wild & at this season dreary scenery of the Rideau, some parts of which are very remarkable.
>
> Of the discomforts of the "Hunter" I shall only say that the accommodations were wholly inadequate to the numbers embarked . . . the cabins dark and dirty, the berths without bedding, the fare poor & scanty . . .

There are no illustrations of the *Hunter*, which plied the Rideau for at least five years, from 1840. But on one run it reportedly towed no fewer than twenty-four barges at one time.

The Royals at the Ste Anne Rapids, 1840, watercolour copy by Second Lieutenant T. S. W. Broadley, 1890, after an original sketch by George R. Dartnell, 14 x 23 cm, collection of The Royal Scots Regimental Museum, Edinburgh Castle

PHOTO COURTESY THE ROYAL SCOTS REGIMENTAL MUSEUM, EDINBURGH

Fortunately conditions for the beleaguered travellers did eventually improve:

At Kingston which was entered during a gale of wind, the regt, all but one vomiting, embarked on board that splendid boat the "William 4". After a fine run of 24 hours, the 1st. landed in Hamilton in sunshine on Sunday the 10th May.

The march from Hamilton to London occupied 6 days & from the fineness of the weather and the richness and beauty of the country formed a most pleasing contrast to the preceeding part of the route.

The second trip took place three years later when the right wing of the Royals headed back east once again. The first leg of the journey, from Toronto to Kingston, was travelled by lake steamer. However, in his book about the *Premier*, Dartnell remarked that for the second leg of the journey, from Kingston to Quebec City, the regiment was to follow an experimental route instead of the well-travelled route via Bytown that they had taken in 1840. The new route had been used for transporting cargo but 1843 marked the first year that is was used for passengers.

Hitherto, in proceeding to, as well as from, the Lower Province, the troops have all been forwarded by way of the Rideau Canal; but, a few small steamers having been built, on mercantile speculation, of small draught of water, expressly for navigating the rapids of the St Lawrence, with a view to expedition and economy, the regiments proceeding down this year have all been sent by this new route—an experiment that, if repeated, it is feared by many, will result . . . in some wholesale catastrophe. It is true that time and expense are both saved by this *rapid* mode of conveyance, which may do very well for insurable goods; but to huddle a mass of powerless human beings into small boats, and whirl them, with the speed of lightening, down these fearful rapids, seems a 'clean tempting o' Providence.'

The officers and some of the men embarked on one of the specially built schooner-rigged steamers called a puffer. The rest of the men were crowded into two large bateaux that were to be towed alongside. As it happened, the upper rapids were not very difficult to navigate, but the lower rapids were very dangerous and frightening. At the approach to these rapids, the bateaux were cut loose from the steamer for the tricky descent. Dartnell's words and

The Royals at the Entrance to the Rideau Canal, 1840, watercolour copy by Second Lieutenant T. S. W. Broadley, 1890, after an original sketch by George R. Dartnell, 13 x 22.5 cm, collection of The Royal Scots Regimental Museum, Edinburgh Castle

PHOTO COURTESY THE ROYAL SCOTS REGIMENTAL MUSEUM, EDINBURGH

Upset of the Launch, 1843, pen and brown ink and brown wash, heightened with white over graphite, 17.2 x 23 cm (oval), private collection

illustrations express the terror and utter helplessness that all felt during the descent into the churning waters. In spite of the extreme peril, the right wing of the Royals arrived safely in Quebec City where they were to wait for the *Premier*, the ship that would carry them to the West Indies.

Ten days later the *Premier* sailed into Quebec harbour and on 28 October 1843, accompanied by the bands of two other regiments, the Royals marched to the ship for embarkation, accompanied by some of their families. There was a total of 350 passengers. The ship set sail on 31 October after two days of organizing and stowing away all necessary supplies and cargo.

On 3 November the *Premier* reached Green Island, where the river pilot left the ship. Normally he would have stayed on until the ship reached Bic Island, about eighty kilometres further on, but the weather was so clear that this seemed unnecessary. As the day wore on however, the weather deteriorated; by nightfall the wind had freshened to a gale, and the atmosphere was thick with snow squalls. Most of the passengers headed for their cabins after an evening of song intended to lift their spirits. The night watch made themselves as comfortable as possible under the horrible conditions and the captain remained on deck, nervously checking charts and supervising the steering. His task was made no easier by a sluggish compass that needed constant tapping to keep it "in a state of activity." The lookout on the forecastle "sneaked off unobserved to his berth." In this state, and because of the wild weather and the strong current, the captain changed his course as planned even though he missed seeing the lighthouse at Point des Monts. At about three in the morning on 4 November the ship struck the ground with "fearful violence." Two more formidable bumps sent Dartnell, along with everyone else, up on deck, where they encountered a scene of confusion and dismay:

> A heavy gale was blowing, and thick driving snow, the night intensely dark, the sea running mountain high, and bursting in floods over the decks; the ship plunged and laboured dreadfully, as if struggling like an ensnared animal to free herself, but in vain, her bottom violently striking against the ground with a most frightful and indescribable sensation, and the sails slatting, with thundering sound, against the bending masts, whilst the shrieks of the women and children mingled with the howlings of the wind.

Blue lights were burned and signal guns were fired, but there was no reply. Because the ship was rolling so heavily, the crew was forced to cut away the

huge, heavy fore and main masts before they caused the ship to overturn. Finally, as the "long wished-for morning broke," the passengers and crew saw that they were not far from shore. They could make out some figures on the beach, and noted that there were a few boats and huts nearby. However, the situation on board the *Premier* was becoming more perilous because she was taking on water at a great rate, yet the surf on the beach was still far too high to allow any rescue attempt. Several efforts were made by those on board to get a line to shore, but all small boats and objects to which the rope was attached were dashed to pieces by the waves.

When all else had failed, six men were lowered into the the ship's large launch so that they could try to row to shore. Although the boat capsized in the surf at the beach, waiting fishermen were able to drag the men to safety. The men on shore erected a sign on the beach warning those on the "Premier" not to attempt the risky trip to shore. By about 10:00 a.m., the waves had pushed the ship closer to shore, and Dartnell guessed that they were less than four hundred metres away. The wind was subsiding and the snow was no longer falling but waves still crashed over the ship's decks.

A long boat, which had been roofed over to hold sheep, pigs, and geese, was lifted from the deck of the *Premier* and lowered into the turbulent waters, a task made more difficult without the masts and tackle. On this boat, a line attached to the *Premier* was successfully taken to shore. A group of villagers and their leader launched one of their own boats, and by hauling on this line, they were able to reach the *Premier*. The leader informed those on the ship that they were in Cap Chat Bay on the south shore near the mouth of the St Lawrence, about 483 kilometres below Quebec. Rescue plans were hastily made; women and children were the first to be taken ashore. The whole procedure took more than nine hours because there was only one rescue craft and conditions remained treacherous. When everyone was safely on land (miraculously there were no casualties), they were billeted in local cabins and barns and given potatoes, salt fish, and country rum.

During the next few days, as much as possible was retrieved from the wreck:

Officers' Shanty at Cap Chat Bay, 1843, watercolour over graphite, 12 x 20 cm, private collection

Rescue of Materials from the Wreck, 1843, pen and brown ink and wash, 12 x 19.8 cm, private collection

provisions first, followed by arms, equipment, and light luggage, and finally other ship's articles, government stores, and general baggage. Because food supplies were very limited in the tiny, remote village, the drowned livestock that had washed up on shore was quickly prepared for consumption. Even the contents of bags of soaked biscuit "pulp" were washed in fresh water and worked into dough with a little good dry flour to produce bread.

The day after the wreck, an officer had been sent on foot to Quebec City with dispatches for the commanding officer that announced the misfortunes of the *Premier*. Eight days later, at dawn, the victims of the shipwreck were awakened by the horn of the *Unicorn*, a steamer sent from Quebec City to transport them back. Drums and bugles quickly announced the call to "Assembly." By 5:00 p.m. that day, all were safely aboard, although conditions were so crowded that some men were forced to stay on deck. The regiment arrived in Quebec City the following evening, where they were welcomed with a good supper at the Jesuit Barracks, followed by a good night's sleep in beds generously relinquished by the men of the regiment quartered there.

The Royals were heaped with praise for their bravery throughout the ordeal by the local commander, Major General Sir James A. Hope, and eventually messages arrived from the Duke of Wellington and Her Majesty Queen Victoria. However, it was now so late in the season that the St Lawrence River shipping was closed until spring. The Royals, who had sold all of their heavy clothing and equipment before their departure for the West Indies, had to be resettled and outfitted to spend winter in Quebec.

Dartnell had fallen ill either during the voyage or after the wreck. He returned to the United Kingdom early in 1844. On his leave he worked on the book about the *Premier* disaster, and by the summer he sent out advertisements announcing his intention of publishing the book if enough subscriptions were received. A total of 390 copies of the book were ordered at a cost of ten shillings each, and it was published in England in 1845.

Among Dartnell's Canadian watercolours, which have remained with his descendants over the years, are a few of the original sketches showing the wreck. Otherwise little visual material has been found that portrays the journeys of the Royals. Three recently discovered, important watercolours, copied from Dartnell originals (whereabouts unknown), bring life to Dartnell's written accounts and add significantly to the pictorial record of travel in Canada in the early 1840s. The copies were made in 1890 by Second Lieutenant T. S. W. Broadley in Natal, where Broadley must have seen the originals, at that time in the possession of the artist's son, John G. Dartnell. The copies appear to be good because they reflect a sense of Dartnell's style. They were presented to the Royal Scots, as the Royal Regiment was later called, and they are now housed in the regimental museum in Edinburgh Castle.

Posted to Canada: The Watercolours of George Russell Dartnell 1835-1844 *is on display at the ROM from 26 September 1987 to 28 February 1988.*

Honor de Pencier is curator of the exhibition Posted To Canada: The Watercolours of George Russell Dartnell 1835-1844. *A book of the same title, written by de Pencier, will be published this fall by Dundurn Press.*

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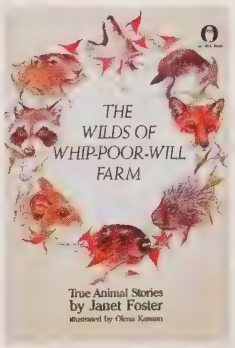

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Eugene Galien-Laloue: Place de La Republique, signed —gouache with pencil, 15⅜ x 20⅛ in. (39 x 53.8 cm.) Sold by a Canadian consignor at Christie's New York for $24,407.

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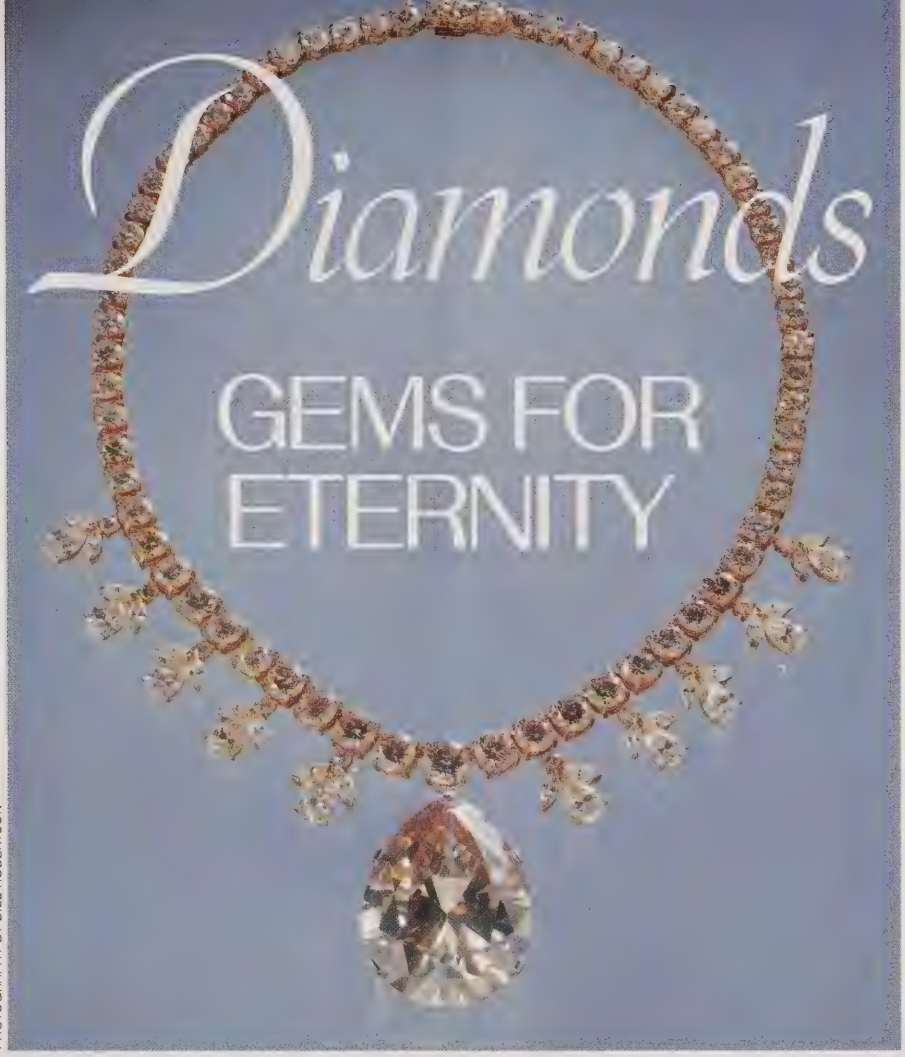

PHOTOGRAPHY BY BILL ROBERTSON

Diamonds are renowned for their beauty and versatility. Yet their reputation for being "a girl's best friend" is not always justified.

Peta Daniels

ZSA ZSA Gabor is reputed to have said: "I never hated a man enough to give him his diamonds back." A wise sentiment indeed, for although diamonds are by no means the rarest of gemstones, they are still among the most highly valued. In 1985 the value of diamond jewellery purchased in the United States alone amounted to more than eight billion dollars. Statistics reveal that one of every ten American women owns a diamond, and that *doesn't* include engagement rings.

Formed deep in the earth under intense heat and pressure, diamonds are nothing more than carbon; they are identical in chemical composition to graphite and similar to coal. What distinguishes them from their softer relatives is the alignment of their atoms. These have crystallized into a dense cubic arrangement that gives diamonds a hardness unequalled by any other mineral.

Perhaps because of their hardness, diamonds have come to be associated with longevity both in substance and sentiment. They are still the gemstone

The Victoria Transvaal diamond, weighing 67.89 carats, hangs from a necklace of platinum and gold with 106 other diamonds that weigh a total of approximately forty-five carats. Collection of the Smithsonian Institution, donated by Victoria and Leonard E. Wilkinson

of choice for marriage rings and are also used to commemorate sixtieth and seventy-fifth anniversaries. The ROM recently displayed some magnificent diamonds from the collections of the Smithsonian Institution in the 75th anniversary exhibition *Eye of the Beholder.*

The factors which contribute to the value of diamonds are carat weight, clarity, cut, and colour. The carat, as a standard of measure, was originally based on the uniform weight of grains and seeds such as the carob seed, which was used to measure the weight of gold. The term itself comes from *girat*, an Arabic word meaning "weight of four grains." Interpretations of the actual weight of a carat once varied considerably from country to country, but since 1914 it has been generally accepted that in the valuation of gemstones one carat is equal to 1/142 of an ounce or 1/5 of a gram.

The largest diamond found to date is the Cullinan, which was pulled out of the wall of a shaft of the Premier Mine in South Africa in 1905. Weighing 3106 carats uncut, it was three times as large as its closest rival, the Excelsior, which weighed 995.2 carats. The Cullinan was purchased by the government of South Africa and presented in its uncut state as a gift to King Edward VII of England. While the eyes of the press were focused on two armed policemen assigned to transport the stone from Johannesburg to England by train and ship, the diamond was secretly sent to London by registered mail.

The Cullinan produced the two largest cut diamonds in the world, both of which are among the British crown jewels. The Cullinan I (also known as the Great Star of Africa) weighs 530.2 carats and is set in the royal sceptre. The Cullinan II weighs 317.4 carats and is set in the front of the Imperial state crown beneath a ruby of irregular shape and extraordinary size.

The deep underground deposits of South Africa, which are now the best-known sources of diamonds, were not discovered until late in the 1800s. Before that, most diamonds were chance finds from river gravels or weathered-out deposits near the surface, and many of the great stones came from India. One celebrated example, also among the British crown jewels, is the Koh-i-noor (Mountain of Light) which is set in the front of the Queen Mother's crown. At 108.93 carats, it is twenty-third on the list of the largest cut stones (although it is the fourteenth largest white diamond). The Koh-i-noor's history can be traced from A.D. 1304, when it was owned by the Raja of Malwa. In 1850 it was given to Queen Victoria, who had it recut, thereby reducing its size from 186 carats and modifying its mountainous shape.

The cut of a diamond is so essential to the disclosure of its beauty that stones have frequently been recut, as was the Koh-i-noor, in spite of the fact that this has invariably diminished their size. The most popular cut is the brilliant, which applies fifty-eight facets to the stone, maximizing its ability to reflect light. Designs for predecessors of the brilliant cut were developed in Venice in the 17th century by a lapidary named Vincenti Peruzzi. Techniques for diamond cutting were still experimental in the 15th century; the hardness of the stone posed a formidable obstacle to its cutting until it was discovered that diamonds could be ground and polished with an abrasive of diamond dust suspended in oil.

Faceted gemstones are generally a more recent innovation than their common use in jewellery would suggest. Before the 1600s, stones were ground and polished but often their shapes were not substantially altered. A magnificent necklace of tumbled emeralds in the Smithsonian Institution's collections is an example of the beauty of uncut stones. The diamond-encrusted platinum setting was created by Cartier about 1928. However, the uncut stones, gently graduated in size, that are part of the design of the necklace hint at a probable earlier history of the emeralds in India, where they would certainly have been owned centuries before by someone of wealth and position. The Mughal nobility of India provided a ready market for emeralds that were brought to them from Colombia, South America, by the Spaniards.

A preference for coloured gemstones need not prevent diamonds from becoming a "girl's best friend." Coloured diamonds may result from many factors, including irradiation or trace amounts of other elements such as nitrogen in

Necklace of tumbled emeralds, with diamonds in a setting of platinum designed by Cartier in 1928–29, collection of the Smithsonian Institution, donated by Mrs Marjorie Merriweather Post

the stone. The Victoria Transvaal diamond is an outstanding example of what is classified gemologically as a brown diamond although it appears to the eye as the sumptuous golden colour of champagne. The diamond, which is 67.89 carats, was cut in 1951 from a 240-carat piece found in the Premier Mine. It is suspended from a necklace of platinum and gold with 106 other diamonds that have a combined weight of approximately forty-five carats.

The Smithsonian also holds the most famous of all the coloured stones, the Hope Diamond. At 62.5 carats, the Hope is the largest blue diamond in existence. Rumoured to have been plucked from the eye of an idol in India, the Hope is said to have brought misfortune or death to all who have owned it, and it is in such high demand by the Smithsonian's own viewing public that it is never taken off display.

Among the Hope's ill-fated owners was the Queen of France, Marie Antoinette. The 18th-century queen's passion for diamonds was so legendary that it has been suggested that it might even have contributed to her eventual demise during the French Revolution.

In 1785 the queen was implicated in a scandal surrounding the purchase of a diamond necklace made by a jeweller named Bohmer. The so-called queen's necklace has been described as a river of diamonds of incomparable quality and worth. In fact, the price of the necklace was so exorbitant that neither the king nor the queen would agree to purchase it from Bohmer, fearing the possible repercussions from a public increasingly hostile to the

use of taxes to support the whims of the crown. In a desperate attempt to recoup his investment, Bohmer enlisted the aid of the Countess de la Motte-Valois, erroneously believing that she had the ear of the queen and was acting on her behalf to arrange the purchase of the necklace. The countess, in turn, persuaded the Cardinal de Rohan to finance the purchase, exploiting his desire to gain favour with the queen. Through an elaborate charade which included a clandestine nocturnal meeting with the queen (played by a prostitute) in the garden at Versailles, the countess convinced the cardinal that he was serving the interests of his monarch.

With the first payment made, the necklace was delivered to the countess, who proceeded to sell the diamonds, without their setting, in Paris and London. When no further payments were received, Bohmer approached the queen and the scandal broke. The offending parties were arrested and put on trial by the Parliament of Paris. The cardinal was acquitted, but the affair succeeded in polarizing the opinions of the nation. Members of the church, the aristocracy, and the general populace became firm in their conviction that the matter had been orchestrated by the queen in an attempt to disguise an unconscionable act: the use of the taxes of the poor to purchase a diamond necklace.

Ring containing a flawless blue diamond (19.46 carats) set in platinum with two half-moon diamonds (1.76 carats combined weight), private collection

Marie Antoinette earrings, a gift from her husband Louis XVI c. 1774. Collection of the Smithsonian Institution, donated by Mrs Eleanor Close Barzin (daughter of Mrs Marjorie Merriweather Post)

While the queen's necklace never actually came into the hands of Marie Antoinette, she was no stranger to magnificent diamonds. Early in his reign her husband, Louis XVI, gave her a pair of diamond earrings. These earrings are believed to be the ones now in the Smithsonian. They contain two large pear-shaped diamonds which weigh thirteen and nineteen carats. The large stones are mounted with additional stones totalling twelve carats in platinum settings, which are replicas of the original gold and silver settings.

The queen is said to have been so fond of the earrings that she wore them constantly. Certainly they were among the pieces that she kept in her possession in 1791 when she arranged for her hairdresser to take the majority of her jewels out of France. Later that year members of the royal family were arrested as they attempted to flee from the revolutionaries. Although there is no mention of the earrings in the arrest record, they were probably taken from the queen at that time. Marie Antoinette was guillotined on 16 October 1793. In his *Reflections on the Revolution in France*, Edmund Burke sadly wrote: "It is now sixteen or seventeen years since I saw the Queen of France . . . glittering like the morning star, full of life, and splendour, and joy . . . . Little

Napoleon necklace, commissioned by Napoleon Bonaparte for his wife Marie Louise of Austria in 1811 to commemorate the birth of their son. Diamonds (172 weighing a total of 275 carats) set in silver and gold, collection of the Smithsonian Institution, donated by Mrs Marjorie Merriweather Post

did I dream that I should have lived to see disasters fallen upon her in a nation of gallant men . . . . "

Marie Antoinette's niece, Marie Louise of Austria, may never have seen her aunt's diamonds, but she succeeded in acquiring some astonishing gems of her own. She was the second wife of Napoleon Bonaparte, who divorced Josephine to marry her for the express purpose of securing an heir to his empire. When the child was born in 1811, Napoleon commissioned a necklace for Marie Louise composed of 172 diamonds with a combined weight of 275 carats, set in silver and gold.

Alas, the diamonds were not sufficient to win Marie Louise's devotion. She refused to join Napoleon in Elba when he was sent into exile, and soon after his death she married her lover, to whom she had already borne two children. Marie Louise bequeathed the necklace to her sister-in-law in 1847 and it stayed with the Austrian crown jewels until 1929.

Neither of these royal personages could possibly have imagined the uses to which diamonds would be put in the 20th century. Their cutting edges are employed for everything from industrial drilling to eye surgery, and their ability to withstand and conduct heat is utilized in high-capacity miniature transmitters for television and telephone signals. A small sheet of diamond has even served as a window pane in the Pioneer spacecraft, withstanding the torturous conditions of space as part of the United States' exploration of Venus. Still, such practical applications have done little to diminish our fascination with these beautiful and resilient gems. As an ancient Hindu scholar noted: "He who buys a diamond purchases a fragment of eternity."

Peta Daniels is a technician in the Department of New World Archaeology, ROM. She organized the ROM 75th anniversary exhibition Eye of the Beholder: Objects for Personal Adornment.

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NO CONDITION IS PERMANENT

Travelling by mammy wagon in Sierra Leone is a great way to meet new people, chickens, and goats.

Jeanne Cannizzo

IT'S not even easy to get across the street, let alone thirty kilometres down the road, in another culture if you don't know the rules. And when I did finally learn the rules in the lorry park of Bo, Sierra Leone, it became even harder. To negotiate a West African journey successfully, you must come to understand the subculture of the mammy wagon and its driver, to admire his death-defying stunts behind the wheel, to relish the rituals of roadside repair, and to seek solace in the slogans and paintings that transform ordinary trucks into urban folk art on wheels.

All trips begin in the lorry park, which itself begins life as any large vacant lot close to the centre of town, but soon becomes unrecognizable as Fullah merchants begin to sell begonia-flavoured toothpaste and Chinese patent medicines from open-faced stalls. They are joined by tailors waiting for customers, with an old Butterick's pattern book open at the latest, only slightly out-of-date, fashions. Market women offer second-hand clothing from warmer climes such as woolly sweaters to wear when the cold harmattan wind blows down from the Sahara. Their daughters hawk pineapples or tins of tomato paste from enamel trays that are effortlessly balanced on their heads. Humming the latest reggae tunes from Jamaica, teenage boys sell single bottles of soda pop to waiting passengers. And the wait can be anywhere up to five hours.

There are no scheduled departures, no estimated times of arrival, no set (only conventional) fares, no regular routes. That several hundred passengers ever get anywhere is not as miraculous as it seems, however, for order is imposed on this chaos by the scores of motoboys who tout for the lorry drivers. They comb the lorry park, shouting out intended destinations, probable stopping points in between, and opening bids for fares. Having snagged a customer, they guide their prize to the waiting lorry and begin to load. Motoboys make no distinctions between freight and passengers, so that you might be sitting on a sack of palm kernels or next to an open basket of sun-dried bonga fish.

Of course, a lorry is never full. I have ridden in an ordinary sedan used as a taxi with ten other people, and I've counted twenty-two men, women, and children as well as a pair of chickens in a mammy wagon no bigger than a

Opposite page: Two teenagers selling soda pop in a lorry park in Sierra Leone. Such refreshment is welcomed by travellers who may wait up to five hours for mammy wagons to depart for their destinations.

PHOTOGRAPHY BY DAVID STAFFORD

small pick-up truck. The sense of personal space is different than in Canadian society, and a high level of sociability and patience ensure a good-humoured bantering among passengers while the motoboys slowly round up an acceptable load. It is to the passengers' advantage to wait, for the larger their number, the smaller the fare. For market women whose profit margin is very narrow, that is an important consideration. They spend their time catching up on local gossip and building up a future stock of stories by observing where and with whom everyone else is travelling. Street vendors offer them little sticks of delicious charcoal-grilled bush rat, and they often have a nap.

The motoboys are too busy to sleep, however. Between touting and loading, they fill the radiator, check for tire leaks, and make themselves useful to the drivers. They are not paid for these services; instead they are taught to drive and the ways of the road. Much of the time they are cleaning and polishing their mammy wagons.

The mammy wagon is named after the women traders who first took to the roads in them. The term comes from the *Krio*, an English-based creole language with an African spirit, which is the language of the streets and of commerce in a town where as many as twenty different languages can be heard in the lorry park. The strange hybrid vehicle uses an imported, mass-produced truck frame to which has been attached a body or appendage designed and manufactured locally. When this type of transportation first developed, the British-made Bedfords were common, but they have been replaced by Mazdas and Toyotas, sometimes now with fewer customized alterations.

Mammy wagons are a relatively recent invention. The British built a wondrous narrow-gauge railway at the turn of the century; its single line connected the capital of Freetown and the Liberian border several hundred kilometres to the east. But it was difficult for people to get their produce up to the line, particularly if in small bundles. There were no real roads, few vehicles, and a scarcity of trained drivers until after the Second World War. In fact, the first road link joining the colony on the coast with the hinterland protectorate wasn't completed until 1940.

Freetown, with its huge natural harbour, became a vital port for Allied shipping after the fall of France, and many Sierra Leonean men found work as drivers and mechanics serving the war effort. Others went to Burma with auxiliary transport units. When the war was over, these men formed the core of a new profession, ready to take advantage of postwar prosperity. Then in the 1950s diamonds were discovered "up country." The diamond boom gave impetus to the development of a road transport system in Sierra Leone. It is still the most important system, for there is only a skeletal air service and the railway tracks were pulled up for scrap iron in the 1960s, much to the consternation of railway buffs in the United Kingdom.

The crucial role of the mammy wagon is the basis of the high status enjoyed by the drivers, who still represent to many villagers the epitome of modernity. These young men are often envied by their peers, for they have money to spend and they garner prestige from their mastery of imported technology and their acquaintance with the wider world. Their highly developed sense of personal style is reflected in their choice of expensive European clothes or locally made imitations: bell bottom trousers, tailored shirts, an assortment of caps and hats, running shoes, boots or rubber flip-flops, and the rare and highly prized sunglasses or wristwatch. Body language backs up the image, for they lounge and pose possessively with their lorries, one leg up on the front fender, hands on hips or grasping the windshield wiper.

They are skilled practitioners of the art of self-display and their machines are an extension of themselves. They commission signpainters to decorate their trucks with slogans and paintings that transform them into mobile art galleries. The sources of this art are as varied as the interests of the drivers and include the Koran, the Bible, and contemporary wisdom from the silver screen and the world of advertising. On the streets of Bo, movie posters advertise the well-attended Kung Fu action flicks and Indian epic-romances in stunning technicolour. Billboards urge Sierra Leoneans to drink Guinness, smoke

Top: Lions commonly decorate the mammy wagons. Sierra Leone means Mountain of the Lion.
Bottom: Kung Fu is one of the many macho images portrayed on mammy wagons.

A woman passenger waits patiently for her trip to begin.
Left: Shanghai Joe's message is loud and clear.

Dunhills, buy a Mercedes, and bank at Barclays. They may all provide graphic illustration of the material accoutrements of the successful urbanite, but for the vast majority of Sierra Leoneans, they remain aspirations.

The decoration on a mammy wagon is as ephemeral as the changing moods and fortunes of the driver, but its meaning is always directed at other people. This is true whether the slogans are about piety or pride, whether the paintings emphasize a man's reputation or his respectability.

When entering the lorry park we're told to "Watch Out For S. B.," or informed that "Catco's In Town," or that "Shanghai Joe Is Looking Out For Bread." Some of the slogans are incomplete, but riders know that "In Time To Come" the driver is going to be a "Big Man In Town" like "Yenkey Boy" and "Brother Man." Many of these names are from the world of pop music, which drivers hear in the bars that they frequent on their off-duty hours. The walls of these bars are also covered in the signwriters' art, including portraits of singers like Black American Isaac Hayes and reggae star Jimmy Cliff.

The drivers are conscious of themselves as urbanites and as citizens of a modern state; that is to say, as a group no longer exclusively defined by ethnic and linguistic loyalties. Their allegiance to contemporary Sierra Leone is wonderfully expressed in the omnipresent lion, the patrimonial beast. Although it is unclear just why Sierra Leone came to be called after the "Mountain of the Lion," the imagery suggested by the Portuguese name has entered the popular mind in the form of charming lions who stride or stalk the door panels of the mammy wagons. Often with vaguely human faces and always with swelling chests, they represent both power and danger and, on a more personal level, the male prowess of the drivers.

But this bravado is accompanied by a nagging worry, for many drivers believe they are the focus of great envy and vulnerable to witchcraft from the

less successful. Thus we are warned that "Your Best Friend Is Your Secret Enemy." Those who believe that the best defence is attack have their lorries protected by such reminders as: "Whatever Them Try, Enemy Shame," and "Enemy Regret." The envy and witchcraft such slogans are meant to deflect stem not only from the drivers' undoubted financial success but also from their alleged successes with women. They bolster their reputations by drawing upon movie romances and popular love songs. "If You Love Me, Let Me Know," "Sweet Mother," "Baby Love," "Ladies Choice," and "Here Is My Heart" are sometimes accompanied by paintings of hearts, Playboy bunnies, and flowers. The competition implied in these choices is evident in the much-admired portraits of Kung Fu artists in aggressive stances that occasionally grace the side-panels of the trucks.

But there is another equally strong set of themes in the mobile galleries' offerings of spiritual inspiration and moralizing homilies. We are exhorted to "Labour And Expect," and reminded that "Crime Does Not Pay" and that "Time Will Tell." If we succumb to temptation, we can be heartened by the thought that "The Downfall Of A Man Is Not The End Of His Life." My favourite in this category was the new truck whose owner commissioned above the cab "No Sucess Without Struggle." When someone pointed out the spelling error, he had the slogan repainted. It then read "No Success Without Sturggle." You can almost hear the sighs of resignation behind "How For Do," the Krio equivalent of "That's Life," and the cheerful optimism of "Mother's Blessing" and "Courage The People."

If "Mother's Blessing" fails, there's always God's protection. "God Go With You" is common and "If God Gree" (If God agrees, we'll make it) and "Not in Human Beings" (Put your faith in God, not in human beings) abound. I could never bring myself to ride in any of the lorries bearing in extra large letters "Save Us O God," for it seemed to tempt fate. The only paintings on a religious theme were those favoured by Muslim drivers, which featured Abraham's willingness to sacrifice his son Isaac. The scene shows the angel of the Lord intervening at the last minute, substituting a lamb for the human offering. Passengers who liked this scene on the mammy wagons said it reminded them of their obligation to make material sacrifices to help the needy.

The reason for these homilies is to be found not only in the religiosity of the people but also in the expressive style of driving favoured by the young men who command the roads. The British seem to have felt that their colonial charges had no aptitude for mechanics and machines in general, but the ingenuity of the drivers in keeping their vehicles on the road, despite a lack of spare parts and the appalling driving conditions, suggests otherwise. The roads over which many drivers ply their trade are sometimes stunningly awful. Many are unpaved laterite tracks, which in the dry season billow with thick clouds of red dust, for laterite soil is rich in iron oxides. In the rainy season the dust turns to tomato soup. Then the erosion begins. By the next dry season there are deep grooves in the road that eventually come to resemble an old washboard. If you go slower than fifteen kilometres per hour or faster than one hundred kilometres per hour over these "washboards" you might climb out of the mammy wagon in one piece. But who can afford such a leisurely pace, and what clapped-out truck can go more than eighty kilometres per hour?

But driving in Sierra Leone is not merely a means of getting people and their things from one place to another. It is a form of self-expression and has to be looked at as an art, concerned with virility and virtuosity. This becomes obvious in the escalating competitions between drivers of loaded mammy wagons and taxis, who indulge in high-speed chases and play "chicken" to see who will give way first to oncoming traffic. Such stunts demonstrate not only courage but also mastery of the machine. Other such demonstrations have a more utilitarian purpose. In order to save gasoline, drivers take great delight in cresting a hill and immediately cutting the engine, plunging down the other side at a terrifying speed, out of gear, to come to a stop some way down the road, breathless with excitement.

Opposite: Everything from song titles to threats conveys the sentiments of the young men who drive the mammy wagons.

LCOME TO YOU PEOPLE
IF YOU LOVE ME LET ME KNOW
IF E DON LET ME GO
MAZDA
Mobil
ANY WAY TAKE AM EASY
SB 2320

NO SUCESS WITHOUT STRUGGLE
SB 2417
MOTHERS
BLESSING
BOSCH

SAVE US O GOD
MAZDA
SP 459

The slogan "No Condition Is Permanent" is especially appropriate for passengers who have been waiting for hours in the heat of the afternoon sun.

Other displays of technological expertise include the rituals of roadside repair. In a country where many people's lives are totally unaffected by mechanization, whether in the process of rice farming or of cooking the family meal of groundnut stew, a driver's ability to coax a dying mammy wagon back onto the road borders on the magical. And he makes the most of it, brandishing a monkey wrench, or disappearing under the lorry trailing a tangle of different coloured wires. That some of these problems are the result of poor maintenance, an area where drivers tend to skimp in order to maximize profits and accumulate cash, doesn't seem to affect the passengers' appreciation of the resourcefulness displayed.

But there is another aspect of the driver's art that they do not always applaud: the control and manipulation of the "audience" in the back of the mammy wagon. Not only do drivers sometimes refuse to carry customers, but they regularly refuse requests for rest-stops, and then themselves call unscheduled breaks to visit girlfriends or bargain for a basket of oranges.

Finally there are the theatrical starts and stops in clouds of dust, with loud honking and much squealing of bald tires. Sometimes these performances end in dramatic crashes, and the memories of these accidents are preserved on paved roads because the police carefully outline, in white paint, the forms of the victims. They provide a disconcerting reminder of the drama for many months to come. The rusting skeletons of the mammy wagons are left by the wayside to be cannibalized as need arises, their jaunty lions at a crazy angle, the "Save Us O God" slowly disappearing underneath the jungle vines. But on my journeys I always managed to arrive, inspired and protected perhaps by the slogan "Adekam By Goding Power" (I'll make it, God willing).

The mammy wagon as an art form has not been universally admired in Sierra Leone; village elders sometimes have found it confusing, and modernizing African elites often have thought it embarrassingly vulgar. Many art historians are committed to the study of "traditional" works in wood and metal, the masks and sculptures that find their way into our museums. But the social forces necessary for the creation of popular culture are those of urbanization and industrialization, and the paintings and slogans on the mammy wagons represent more than just the disintegration of tradition; they are a creative energy that humanizes the machine and Africanizes the art form. The mammy wagons represent a society generating its world view through a *living* culture. We must not long for what was, after all, an imaginary primitive world in a primordial static condition. For as the motoboys remind us while we complain about the wait in the heat of the afternoon sun, "No Condition Is Permanent." ✪

Jeanne Cannizzo is a research associate in the Department of Ethnology, ROM, and a frequent contributor to the CBC radio program Ideas.

ROM

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IN SEARCH OF A TALISMAN

In his search for ways to revitalize Chinese art, Xu Beihong travelled to Paris and Berlin to study during the years immediately following World War I. The Western art that he found most inspiring astonished even his colleagues in China.

Ka Bo Tsang

TOWARDS the latter part of the 19th century, the influence of Oriental art on European artists had grown beyond the production of chinoiserie. Artists such as Degas and Bonnard were integrating the techniques and perspectives of Eastern art into their own work. However, it was not until the beginning of the 20th century that young Chinese artists, who felt that the artistic traditions of their own culture had become mannered and stale, began to travel to the West in search of inspiration.

Xu Beihong (Ju Péon, 1895–1953), the son of a painter and village schoolmaster from Yixing, Jiangsu Province, studied for eight years in France and Germany. He returned to the East and became not only a pioneer but a leading innovator of modern painting in China. What inspired him in Europe, during his stay from 1919 to 1927, was not the modern Western art movements of Impressionism, Fauvism, Cubism, Dadaism, or Expressionism but rather the masters of the Italian High Renaissance and Dutch baroque, the nationalistic and romantic painting of the early 19th century in France, and the art of Courbet and other realists of mid-19th-century France.

Horse Grazing near a Tree, 1938, fan painting, ink and wash on sprinkled-gold paper, Yukon Chang collection
Opposite: Eagle Attacking a Snake, 1939, hanging scroll, ink and wash on paper, whereabouts unknown

One only has to look at the political and artistic environments in China in the early part of this century to understand what motivated Xu Beihong. First he witnessed the dissection of his country by aggressive foreign powers, which was helpless under the rule of the effete Manchu rulers. China then suffered the turmoil resulting from the transition from imperial rule to the establishment of a republic in 1912. In this climate of change, the Chinese intelligentsia pressed for social, educational, literary, and artistic reforms. They firmly believed that westernization was the way to modernize and strengthen the country.

As early as 1912, Cai Yuanpei, an influential educator, published his famous article, "Views on the Aims of Education," in which he introduced his five

PHOTOGRAPHY COURTESY KA BO TSANG

principles of education. Advocating the equal importance of aesthetic, universal military, utilitarian, and social education, as well as the need to acquire a broad view of the world, Cai stressed his belief that aesthetics might ultimately become a substitute for religion in Chinese life. His concept of art had no national boundaries, and he pointed to the West as a source of inspiration.

As Cai Yuanpei's ideas were gaining popularity, the vernacular literary movement launched by Hu Shi (1891–1962) in 1917 was enjoying the same level of activity. It liberated writers from the formal and complex classical language, thereby enabling them to express their ideas and feelings with much greater freedom. This discovery of self-expression soon found its way into the visual arts.

Fired by these new ways of thinking, Xu Beihong staunchly supported the reformers. By the end of 1917, after a six-month stay in Japan, he had become fascinated by the superb technical skill of Western art, which he had observed first in reproductions in Shanghai. With Cai Yuanpei's appointment of Xu Beihong as an instructor in the newly established Society for the Study of

Landscape in the style of Huang Gongwang, 1699, by Wang Yuanqui (1642–1715), hanging scroll, ink and wash on paper, whereabouts unknown

Painting Methods at the University of Beijing, the young artist was given the opportunity to join fervent discussions with renowned artists about the different ways in which traditional painting could be revitalized. Although there was no disagreement in artistic circles about the stagnation in Chinese painting caused by the repeated imitation of the style of the ancient masters, there were clearly defined differences of opinion about how painting should be rejuvenated.

The traditionalists were proud to be able to trace their predecessors, eminent literati, back to the 13th century. The literati emphasized in painting the expression of their own personalities, and disregarded technical excellence in formal representation. Instead of looking at the living world around them, the traditionalists would use existing art as their only source of inspiration. Repetitions and reinterpretations of the same themes and mannered brushwork rendered the content of the later works monotonous and lifeless. Huang Binhong (1864–1955), the leading figure among the traditionalists, remedied these problems in his own work by re-examining the brush-and-ink techniques of the early masters and by taking his inspiration directly from nature, which he began to observe more closely during his frequent travels.

Top: The Foolish Old Man Trying to Remove a Mountain, ink and wash on paper, collection of the Xu Beihong Memorial Museum, Beijing
Bottom: Tian Heng and his Five Hundred Retainers, (detail) 1928–30, oil on canvas, collection of the Xu Beihong Memorial Museum, Beijing

Members of the Lingnan school, headed by Gao Jianfu (1879–1951) and Qifeng, advocated the creation of a new artistic style resulting from the synthesis of Chinese and Western art. Their understanding of Western art was based, however, on the interpretation of Japanese artists such as Takeuchi Seihō and Yamamoto Shunkyo who had a similar purpose of trying to revitalize Japanese art during the Meiji Restoration (1860–1911). The Lingnan school wanted to relate the content of their art to contemporary issues and to integrate traditional Chinese painting techniques with fundamental Western techniques of perspective, modelling, light, and atmosphere.

Finally there were still other young enthusiasts who flocked to Japan and Europe to see and to learn at first hand about Western art. One of these was Xu Beihong. As a child Xu Beihong was taught by his father to draw directly from nature and the people around him, and therefore as an adult he was adamantly opposed to the imitative style of the literati. Throughout his life, he held steadfastly to the conviction that an innovative spirit must be nurtured at all times, that one should draw inspiration directly from nature, and that in order to achieve a true representation of a subject, realism was indispensable. His famous saying: "Hold fast to your own principles; act independently and singlemindedly" characterized his work and his personality.

Xu Beihong was awarded a scholarship in the Chinese government's "work-study" program in 1919. He travelled first to Paris, where he studied at the Académie Julien and then the equally conservative Ecole des Beaux. Arts. Under the tutelage of A. Flameng, who specialized in historical subjects, and Pascal Adolphe-Jean Dagnan-Bouveret, a popular portrait painter of the Parisian aristocracy, his academic training was thorough and rigorous. Next he spent three years in Berlin where he studied under Arthur Kampf, a realistic genre and portrait painter.

Two works of the High Renaissance deeply impressed Xu Beihong. Leonardo da Vinci's *Last Supper* and Michelangelo's *The Last Judgement* are both characterized by a compact and monumental grouping of figures, which exerts tremendous visual and psychological impact. Xu Beihong was equally fascinated by the dramatic effects, created by superb lighting, of Rembrandt's *Night Watch* and *Prodigal Son.*

Yet what influenced Xu Beihong most were the romantic and realist movements of the 19th century. Delacroix's *Scenes of the Massacre at Chios: Greek Families Awaiting Death or Slavery,* a response to the Greek war of independence against the Turks, touched Xu Beihong, whose own people had recently endured similar hardships. Two of the large-scale canvases that he painted after his return to China were *Longing for an Able Leader* (1928–1934) and *Tian Heng and His Five Hundred Retainers* (1928–1930). Like Delacroix's paintings, these works are an emotional reaction to the ideas of liberty, power, love, and violence.

Longing for an Able Leader depicts a group of roving, starved, and tired refugees, who look up to heaven in earnest hope of finding a saviour to guide them out of misery. The theme is taken from an idea expressed in the *Shujing* (*The Book of History*). Its composition is obviously derived from Delacroix's *Chios.*

In *Tian Heng . . .*, Xu Beihong dramatically portrays a highly emotional scene. Tian Heng, the ruler of the state of Qi, bids farewell to his faithful followers before committing suicide, an act intended to preserve his honour by preventing his surrender to Liu Bang, his conqueror and founder of the Han dynasty (206 B.C.–A.D. 220). Tian Heng, clothed in red, wears a resolute expression; his retainers, some silent, some in doubt, some agitated, some frightened, and all deeply grieved, look on.

Gustave Courbet, the French master of realism whose large canvases were powerful statements about the lives of common men, professed truth as the guiding principle of his art. This belief was close to Xu Beihong's own feeling that an artist must draw from his personal observation and experience. Xu's *The Foolish Old Man Trying to Remove a Mountain* not only illustrates the symbolic theme of an ancient parable that exhorts man to persevere in undertaking

Resting in the Shade of Old Cypresses, 1933, hanging scroll, ink and wash on paper, whereabouts unknown

immense tasks, but also assumes Courbet's attitude in his famous painting *The Stone Breakers*. In the Courbet work, the commonplace activity of digging up stones is given heroic dimensions. Xu Beihong's nudes are concrete images of human strength.

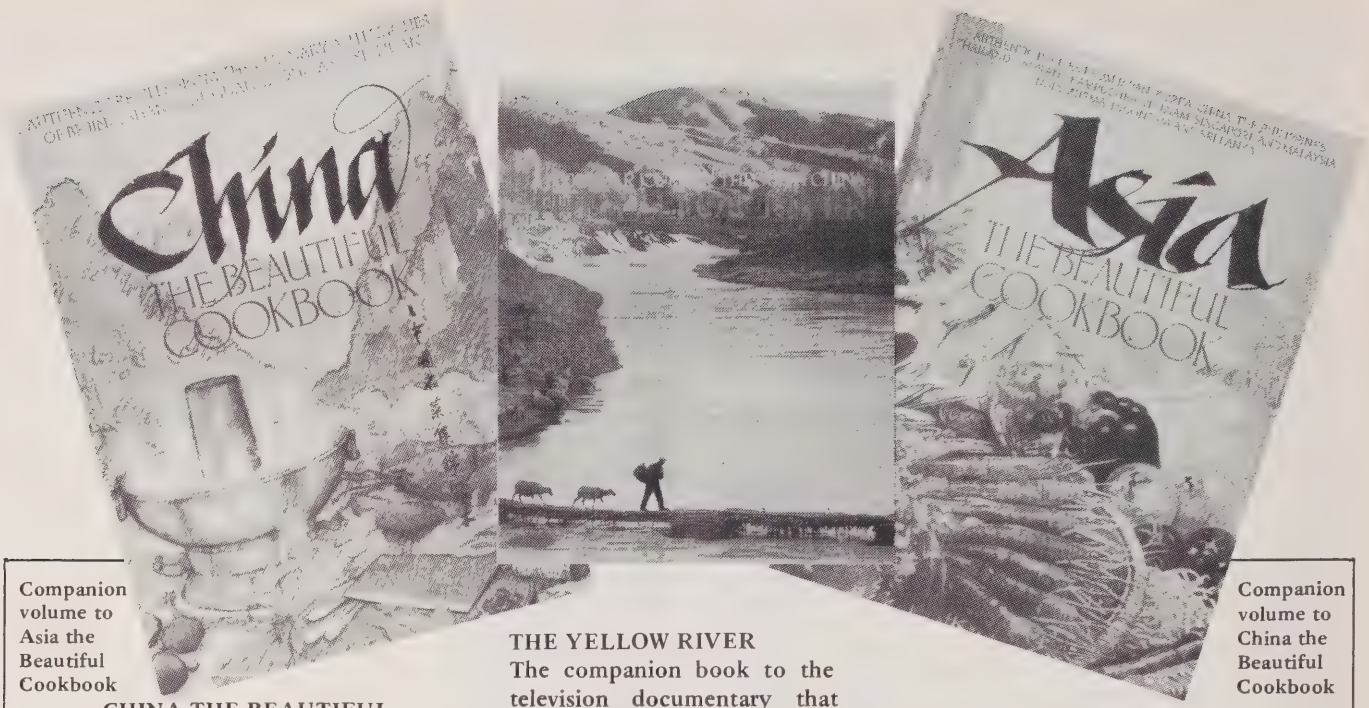
Instead of having his paintings accepted as a favourable artistic union of East and West, Xu Beihong found himself accused of transplanting into China outmoded Western art movements. Furthermore, many of his colleagues found it difficult to accept Chinese historical themes represented in a Western painting medium, or indigenous themes mingled with Western elements. Others felt that the stagelike settings of such compositions were overcrowded with details vying for attention and that the dramatic effects looked very contrived.

Towards the end of the 1920s, the growth of nationalism in China intensified to become a prevailing force reacting against foreign invasion. A re-examination of the national heritage was one expression of this nationalism, and in keeping with this trend, Western-style artists looked once again to traditional Chinese art. Around 1929, Xu Beihong returned to traditional brush-painting technique, but his art retained a certain Western character.

Although Xu Beihong worked firmly within the Chinese tradition, he succeeded in instilling an element of naturalism into his work that was unique in Chinese painting at the time, thus giving it a fresh and contemporary feeling that distinguished it from the work of other artists. Xu Beihong's thorough European training developed in him an analytical mind that could interpret the form and volume of his subject. His technical virtuosity in the handling of colour, perspective, linear movement, and light and shade provided him with an amazing facility to render diverse compositional ideas. And his sense of humour and seemingly inexhaustible creative energy were the driving forces behind his legacy of a vast and delightful *oeuvre*. One need only look at the dynamic characterization of an eagle attacking a snake, ducks and a dog enjoying their meal, a peacefully grazing horse, and a young man musing over the wonders of nature to realize that through a sincere identification of himself with his subject, Xu Beihong brought to life the vibrant imagery of his mind.

The Art Of Xu Beihong is on display at the ROM from 15 August to 27 September 1987. The exhibition is organized and circulated by the Art Gallery of Greater Victoria in co-operation with the Xu Beihong Memorial Museum, China. Assistance has been provided by the Government of Canada, Department of Communications and the Canada Council.

Ka Bo Tsang is a curatorial assistant in the Far Eastern Department, ROM.



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THE COELACANTH: A REAL FISH TALE

The discovery of living coelacanths, a species of fish thought to have become extinct over sixty-five million years ago, has positively delighted scientists. Only the discovery of living dinosaurs would cause greater excitement.

Mary Burridge-Smith

ON a hot December day in 1938, Mary Courtenay-Latimer, the curator of a small museum in East London, South Africa, was busy reconstructing a fossil reptile for display. In the midst of this task, she received a phone call from the captain of the local trawler *Nerine* who said that he had landed several specimens of fish that might be of interest to the museum. She therefore left her work and drove down to the docks to see if anything from the catch was worth salvaging. At first glance she saw only the usual small sharks, rays, starfish, and rat-tail fish. However, as she began sorting through the pile, she spotted a bright blue fin. Pushing the rest of the fish aside, she revealed a beautiful, five-foot-long, mauve-blue fish with iridescent silver markings, and very peculiar limblike fins. As Miss Courtenay-Latimer was staring at this remarkable animal (the like of which she had never before seen), an old fisherman from the *Nerine* remarked: "This fish snapped at the captain's fingers as he looked at it in the trawler."

The curator quickly bundled up the now dead fish and carried it back to the museum. Hoping to put a name to the find, she searched in vain through her meagre collection of fish literature. By this time, the bright blue fish had faded to grey; its preservation was now of the utmost importance. There were no facilities in the museum to handle such a large specimen and so Miss

Artist's conception of a coelacanth. (Norman Webster in *The Fresh & Salt Water Fishes of the World*, Alfred A. Knopf, New York, 1976)

Courtenay-Latimer took the fish to a local taxidermist, who wrapped it in a formalin-soaked cloth and hoped for the best. Miss Courtenay-Latimer then wrote to Dr J. L. B. Smith of Rhodes University, Grahamstown, who had a broad knowledge of fish. Unfortunately, the rudimentary preserving technique failed because the formalin did not penetrate the fish's scales, and so the taxidermist skinned the hapless specimen, keeping the skin but discarding the rest. Furthermore, the photographs taken of the fish when it was caught were accidentally destroyed when the film was removed from the camera. However, when Dr Smith did visit the East London museum several months later, he was still able to determine from the skin that the fish had been a coelacanth, an animal unknown to man except from the fossil record.

The first discovery of a living coelacanth (pronounced seal-a-kanth) rapidly became an international sensation when Smith described the fish as *Latimeria chalumnae.* No one could believe that a species of fish, thought to have been extinct for sixty-five million years, could still exist. Even more important, this specimen might be living evidence of the link between ancient fishes and limbed vertebrate animals or tetrapods. The fossil record indicated that this link was a unique group known as the lobe-finned fishes, to which the coelacanth belongs. The unusual bony structure of the lobed fins is very similar to that of the limbs of ancient amphibians, but it is quite different from the fins of other ancient and most modern fishes.

Why did some ancient fishes leave the water to come onto the land and how was this possible? The lobe-finned fishes first appeared about 350 million years ago, in the early Devonian period. Until the Devonian period, there was abundant animal and plant life in the water, but apparently very little could survive on the barren land. Floods and droughts were frequent, and when droughts occurred great numbers of fishes perished. If the droughts were not too long, some fishes were probably able to survive in very shallow muddy pools by absorbing oxygen from the air through their skin. Over eons, certain fishes evolved the ability to gulp air into the gut. This would allow them to flop out of the muddy pools for a short time to attempt to reach a better supply of water. Fins probably began to modify for better mobility on land. These fishes, no doubt, gave rise to forms that colonized the land and that are in truth our ancestors.

PHOTOGRAPHY COURTESY DEPT OF ICHTHYOLOGY AND HERPETOLOGY, ROM

Two members of an expedition from the New York Aquarium show off a freshly caught coelacanth. Peter Stevens, a Canadian member of the expedition, donated another coelacanth, caught during this trip, to the ROM.

Top: Some scientists believe that sharks, like the spiny dogfish (*Squalus acanthias*), may be related to the coelacanth. *Middle:* Most scientists consider the lungfish (*Protopterus annectans*) to be the closest living relative of the coelacanth. *Bottom:* The appendages of the coelacanth are similarly structured to those of amphibians such as this salamander (*Ambystoma laterale*).

Certainly the coelacanth was involved in this development, but it is not thought to be one of the direct ancestors of tetrapods, because the coelacanth was not part of the group of fishes that evolved to survive on land. Just where the coelacanth does fit into the scheme of things is a controversial subject today. Part of this controversy stems from the fact that some related, ancient families are represented only by fossils; living specimens have yet to be discovered, and it is difficult to conduct a thorough comparative study on fossilized remains. Scientists today are of two major schools of thought regarding the relationships of coelacanths with other fishes; a few think that coelacanths are most closely related to sharks, while most others believe their closest relatives are the lungfishes and the tetrapods.

Scientists favouring the shark/coelacanth relationship have determined several characteristics that the two groups share. These include: ovoviviparity (giving birth to live offspring), large eggs, a spiral valve in the intestine, and the osmoregulatory mechanism. However, most scientists favour the lungfish and tetrapod/coelacanth relationship for numerous reasons.

Lungfishes are a more advanced group of fishes than sharks, and are presently recognized as the closest relatives to tetrapods. Several features link lungfishes to the tetrapods; most notably, both groups have functional lungs, which they can use for aerial respiration, and a pair of internal nostrils, which allow them to exchange air between the external environment and the lungs without opening their mouths.

The structures of the fins of the coelacanth and the lungfish not only link these two animal groups but are perhaps one of their most curious features. Unlike other fishes, the pectoral (forelimb) and pelvic (hindlimb) skeletons are similar to those of ancient amphibians. Lungfishes and coelacanths have only one bone supporting the entire appendage (like man's femur and humerus). However, only lungfishes have two primary joints (like man's shoulder and elbow). The bony skeletons of both the coelacanth and lungfish fins are supported by a strong network of muscles, which causes the fins to be quite lobelike and very manoeuvrable.

The anatomy of the coelacanth is in many ways very remarkable. The backbone is not in fact a bone, as in most fishes, but a tube of cartilagelike material. Solid bony spines support the dorsal fins of most present-day fish; the coelacanth has spines similar to these except that they are hollow (hence the name coelacanth, meaning hollow spine).

Filling only one per cent of the cranial cavity, the coelacanth brain is the smallest vertebrate brain relative to the size of the animal; it is also very primitive. While the area responsible for the sense of smell is poorly developed, the area responsible for sight is fairly well developed. The eye is adapted to low light levels at moderate depths in clear tropical waters; its anatomy resembles that of a variety of mammals and some marine fishes that are able to see in low light levels. There is a mirrorlike device made of crystals that reflects light like the eyes of a cat at night.

The coelacanth's kidneys are unique in that they are almost completely fused together, and they lie below the other internal organs rather than above them. The heart is a simple S-shaped tube. Whereas the swim bladder of most fish is filled with gas in order to retain neutral buoyancy, that of the coelacanth is filled almost completely with fat. The layer of oil-filled cells located just below the skin is another mechanism for buoyancy control in the coelacanth. It is an extremely oily fish.

Once prey enters the mouth of a coelacanth, it is unlikely to escape the simple pointed teeth and the action of the enormous jaw muscles. The coelacanth's teeth are arranged in pairs, one of the pair often being smaller or missing at any given time. The second member of the pair serves as a backup until a new tooth grows in.

Because the large scales of this fish overlap so that only one quarter of each scale remains exposed, there is a three-fold-layer of scales over the entire body surface. The exposed portion of each scale is covered with skin, which may or may not be pigmented, and backwardly pointing sharp teeth or den-

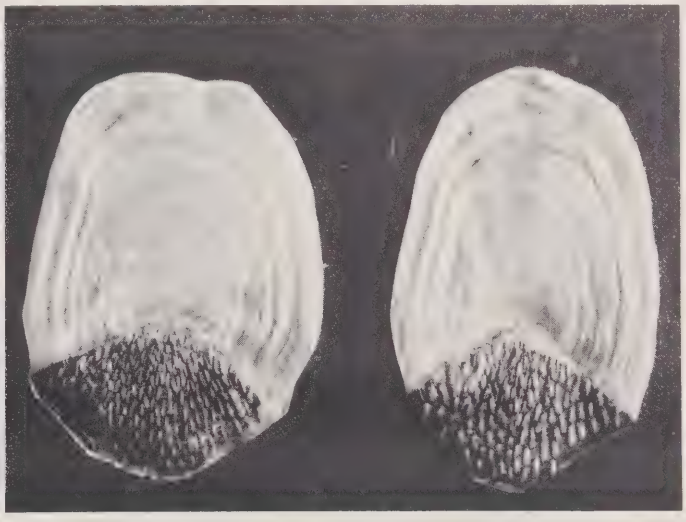
ticles. This heavy armour of scales protects the animal from predators. It is possible to estimate the age of many fishes by counting the age-rings on the scales. These rings are thickened areas that have resulted from growth arrests related to seasonal changes. For the coelacanth, it is thought that there are two periods per year when growth stops and rings are formed. The oldest specimen caught to date was eleven years old and measured 1.8 metres in length.

It is very difficult to study coelacanths in their own habitat deep beneath the ocean surface, although a hypothetical life history can be constructed based on what is known of their anatomy, diet, and catch records. Coelacanths are thought to live at a depth of approximately two hundred metres and in water temperatures of approximately fifteen degrees Celsius. They inhabit rocky reefs and are believed to live in or near freshwater aquafers, which are surface run-offs that drop hundreds of metres through cracks in the volcanic rock and drain into the ocean well below sea level. The aquafers, which are cooler than the surrounding waters, would make it possible for the coelacanths to migrate into shallower waters where there is a greater abundance of food. Their jaw structure, teeth, and reduced digestive tract indicate that they are predators of other fish. Their body shape and the position and structure of their fins apparently allow coelacanths to perch on the reef bottom in ambush and lunge for their prey. Only reef-associated fish have been found in their stomachs.

The coelacanth bears live young. Fertilization of the eggs takes place internally; the eggs hatch and the embryos develop while still inside the mother's oviduct. Coelacanth eggs are the largest found in fishes, each having an average diameter of nine centimetres and weighing between 250 and 300 grams. The gestation period is approximately thirteen months and a yolk sac attached to each embryo serves as a food source during this time.

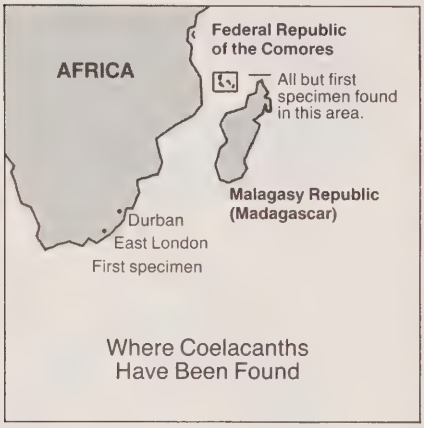
With the exception of the first specimen, coelacanths have been caught only off the Comores, a small group of islands between the northern tip of Madagascar and East Africa. The Comores are high volcanic islands, but unlike other volcanic islands of the Indian Ocean, they are not surrounded by shallow fringing reefs. The shallow lagoons that usually form between fringing reefs and volcanic islands provide good fishing grounds. Instead, the Comoran fishermen must fish along the deep reef edge, at depths of twenty to two hundred metres. Their primary catch is the deep, reef-inhabiting oilfish. The fishermen use a long hand-woven fishing line of natural fibres to which a single hook is attached. Their boats, or pirogues, are hand-hewn from local trees and have outriggers for stability. Only about ten coelacanths are caught each year.

Fishing is the Comorans' livelihood. If they are fortunate enough to catch a coelacanth, they quickly sell it to representatives from museums around



Left: The coelacanth produces the largest eggs of any species of fish. *Right:* The scales of the coelacanth have a partial covering of skin and backwardly pointing sharp teeth or denticles. The age of the fish may be determined by counting the rings on the scales.

Comoran fishermen set out to fish in their small boats known as pirogues.



Where Coelacanths Have Been Found

the world. Selling a coelacanth is lucrative business: at a price of approximately US $1200 (about the average individual income for two years), it is in the Comorans' best interest to catch as many of the rare fish as possible. Whether the coelacanth population can withstand this amount of fishing is unknown because their numbers are unknown. There is always a danger that man will finally make them extinct.

For millions of years there has been life on Earth. Many species of plants and animals that have existed over time are identified by their fossilized remains. From these fossils, it is evident that many ancient forms were quite unlike anything living today. However, there are a few living organisms that have remained unchanged over a vast period of time, and the coelacanth is one of these. At one time coelacanths were spread over most of the Earth; their fossils have been found from Greenland to Madagascar, and in each region it appears that they were all very similar to each other.

The discovery of the coelacanth after its absence from the fossil record for sixty-five million years is indeed amazing. It could be compared to finding a living dinosaur today. And there may be more ancient living forms yet to be discovered. We also know that over millions of years the sea could have harboured creatures of whose existence no accessible fossil traces remain.

Finding the coelacanth has reminded scientists not to be too dogmatic. Claims had been made for a century before 1938 that coelacanths were an extinct line of fishes, and yet in a small, remote corner of the world one appeared. The discovery also established the amazing accuracy of the work of palaeontologists, for their deductions about living coelacanths derived from fragmentary fossils have been proven correct. It is now justifiable to assume that the principles on which the coelacanth reconstruction were based are sound, and hence work on the fossils of other forms of life is equally reliable. Another important result of the discovery is an increased knowledge of the fleshy parts of ancient fishes. Until now, such knowledge has been unobtainable, because only the bony structures are fossilized. By studying the tissues of the coelacanth, which has remained virtually unchanged for 350 million years, we can deduce characteristics of the tissues of the earliest vertebrates.

The Royal Ontario Museum has been fortunate in acquiring a frozen coelacanth. From the frozen specimen, tissue samples have been taken from the muscle, eyes, and various internal organs, and a study of the proteins using such techniques as electrophoresis will be conducted. From a comparative study of the proteins of lungfishes and coelacanths, scientists at the ROM may be able to shed further light on just who the coelacanth's closest relatives really are.

Mary Burridge-Smith is a curatorial assistant in the Department of Ichthyology and Herpetology, ROM.

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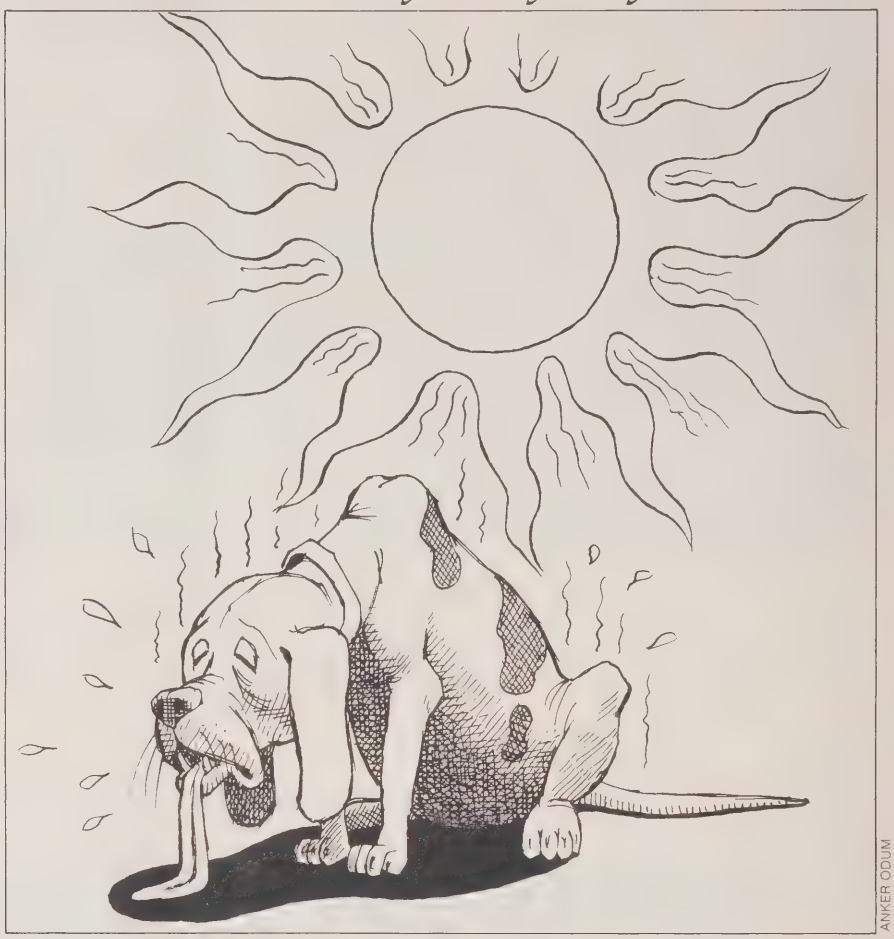
ROTUNDA QUIZ

Those lazy hazy days



ANKER ODUM

1. The "dog days" of summer are supposed to be an oppressively hot period from 3 July to 11 August. Where did the expression "dog days" come from?

2. If this were 21 August 1816, you would be able to glance up from this page and see snow everywhere. It was one of the worst days of the "Year Without a Summer." This winterlike summer in North America was directly connected to a rare but cataclysmic event in the South Pacific a year earlier. What was it?

3. It has been realized only recently that some people who are lethargic and depressed in the winter, tending to oversleep and overeat, are by contrast agitated, impulsive, and even psychotic in the summer. There is a simple treatment for many of these people. What is it?

4. If you haven't ridden the railroad lately, you will be surprised to know that the old familiar clickety-clack, clickety-clack sound of the wheels is gone. That sound, although you could hear it year-round, had a connection to hot summer days. Why did the wheels go clickety-clack, and why don't they now?

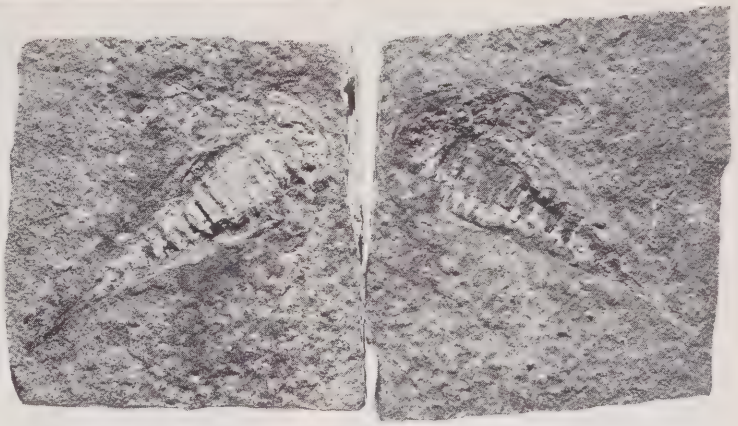
5. The year of Brood X is 1987. No, this is not another David Cronenberg movie: Brood X is the population of seventeen-year cicadas that hatched in April and May. These plump little insects actually take seventeen years to mature; the adults this year came from eggs laid in 1970. Why on earth would seventeen be a good number of years between broods? (Hint: there is also a thirteen-year cicada.)

JAY INGRAM

Turn to page 64 for the answers.

One of the newly acquired bat fossils

PHOTOGRAPHY DEPT, ROM



A newly acquired fossil specimen of a sea scorpion that is preserved as part and counterpart in fine-grained dolomite.

▶ The ROM Department of Vertebrate Palaeontology has recently purchased two extraordinarily well-preserved bat fossils from the middle Eocene period (about forty-five million years old) of Messel, near Darmstadt, West Germany. This famous locality is one of the few in the world that has yielded complete bat fossils: usually a few isolated teeth are the only fossilized bat remains found. The earliest known date for the existence of bats is fifty million years ago, which is during the lower Eocene period. Prior to the ROM purchase, our collections contained only a few fossil bat teeth, and therefore the new specimens are valuable additions.

KEVIN SEYMOUR

▶A fine specimen of the eurypterid (sea scorpion) *Kokomopterus* sp. from the Eramosa Member of the Amabel Formation was recently donated to the Department of Invertebrate Palaeontology by Mr Harold Silk of Wiarton, Ontario. *Kokomopterus* is a rare genus that was not previously represented in the collections. The specimen, preserved as part and counterpart in fine-grained dolomite, probably represents an undescribed species. The Amabel Formation, located near Owen Sound, dates from the Late Silurian period of 415 million years ago.

JANET WADDINGTON

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A gown fit for a queen and a queen fit for all

PHOTOGRAPHY DEPT, ROM

The dress worn by Queen Elizabeth, the Queen Mother, for her visit to the Senate Chambers of the Canadian Parliament in 1939 is in the collections of the Royal Ontario Museum.
Above right: Queen Elizabeth, the Queen Mother, wearing the elegant dress designed for her visit to the Senate, stands with her husband, King George VI, in front of the Parliament Buildings in Ottawa.

Part of our Canadian heritage includes a dress from the textile collections of the Royal Ontario Museum. The dress, which belonged to Queen Elizabeth, wife of King George VI, is made of white satin fabric decorated with simulated baroque pearls and silver sequins and with bands of gold tissue. Skilled needle workers applied all the surface decoration by hand. Norman Hartnell, the English designer of this dress, was famous for the extensive use of hand-worked decoration on his creations. The occasion for which the gown was designed was the state visit to the Senate Chambers of the Canadian Parliament by King George VI and Queen Elizabeth (now Queen Elizabeth the Queen Mother) on 19 May 1939. With the dress, Her Majesty wore diamond jewellery and the blue band of the Order of the Garter, an ancient order of knights.

The king and queen were making a lengthy tour of the Dominion of Canada with a brief stopover in the United States of America. They were strengthening the ties between Britain and North America. World War II broke out a few months later in September 1939, and the British Commonwealth and Empire, to which Canada belongs, was to be embroiled in the conflict for six years.

Queen Elizabeth the Queen Mother was born Elizabeth Angela Marguerite Bowes-Lyon on 4 August 1900, the ninth child of Lord and Lady Glamis, of the Scottish nobility. She married Prince Albert, Duke of York, in Westminster Abbey in London, England, on 26 April 1923. By marrying Prince Albert, Lady Elizabeth became Her Royal Highness, the Duchess of York. Their children are Queen Elizabeth II (formerly Princess Elizabeth) and Princess Margaret.

The Duke and Duchess of York became King George VI and Queen Elizabeth of Britain and Canada in December 1936. They were crowned king and queen in 1937.

FOR THE YOUNGER READER

When they became king and queen, they gave up the titles of duke and duchess and these titles remained out of use for almost fifty years. Recently, Queen Elizabeth II revived the titles when her second son, Prince Andrew, married Miss Sarah Ferguson. They are the new Duke and Duchess of York.

King George VI died in 1952 and his widow, Queen Elizabeth the Queen Consort, became Queen Elizabeth the Queen Mother, known familiarly as "the Queen Mum." Her Majesty has become one of the most, if not the most, loved and popular women of our time. Charles, the Prince of Wales, has said: "She has always been one of those extraordinary, rare people whose touch can turn everything to gold . . . . She belongs to that priceless band of human beings whose greatest gift is to enhance life for others through her own effervescent enthusiasm for life."

The fiftieth anniversary of the Queen Mother's coronation as queen occurred this past 12 May. On 4 August she celebrated her eighty-seventh birthday. If you send the Queen Mother a birthday card and a short note, you will probably receive a note from her in return written by her lady-in-waiting. Think of how exciting it would be to receive a letter in the mail from Her Majesty Queen Elizabeth the Queen Mother.

You can write to her at the following address:

H.M. Queen Elizabeth the Queen Mother,
Clarence House,
1 Birdcage Walk,
London, England.

You should be able to find many pictures of this wonderful woman and much to read about her in your public or school library. You will discover a fascinating, warm, and loving human being. We are fortunate to have Queen Elizabeth as our Queen Mother.

ARTHUR JAMIESON

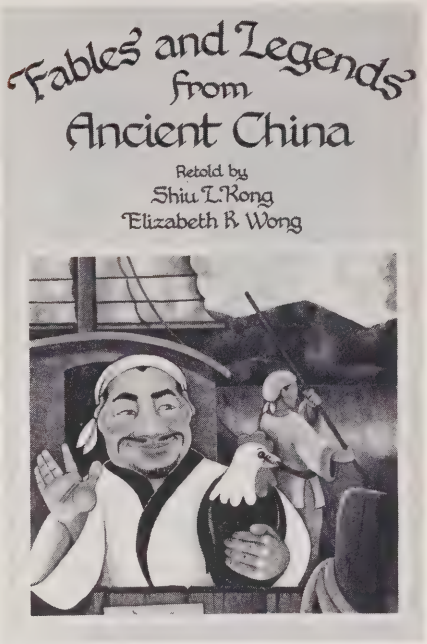
MUSERS' QUIZ

Unscramble these mixed up royal names and places

1. LAPCAE _____
2. TYSEJAM _____
3. LARCENEC _____
4. ZBAILEEHT _____
5. DANGLNE _____
6. WREESTTNIMS _____
7. NRIPEC _____

ANSWERS

1. PALACE 2. MAJESTY 3. CLARENCE 4. ELIZABETH
5. ENGLAND 6. WESTMINSTER 7. PRINCE



Fables and Legends from Ancient China
Shiu L. Kong and Elizabeth K. Wong
illustrated by Michele Nidenoff and Wong Ying
Kensington Educational
99 pp. $15.00 (cloth)

Story-telling has always been an integral part of ancient cultures, especially the Chinese. Now this collection of eighteen tales makes ancient Chinese culture accessible to Canadian children. The most notable characteristic of all these stories is that the heroes win out through force of intelligence rather than any sort of physical superiority. Some of these individuals are young children who outwit adults—for example Hang Tuo, the six-year-old boy who meets and bests the legendary Confucius. Others are animals—such as the fox who escapes being eaten by the tiger by asserting that he is the king of the beasts and somehow manages to prove his case. The stories are well-told and should entertain young readers who enjoy matching wits with their friends.

Recommended for grades three to five

FOR THE YOUNGER READER

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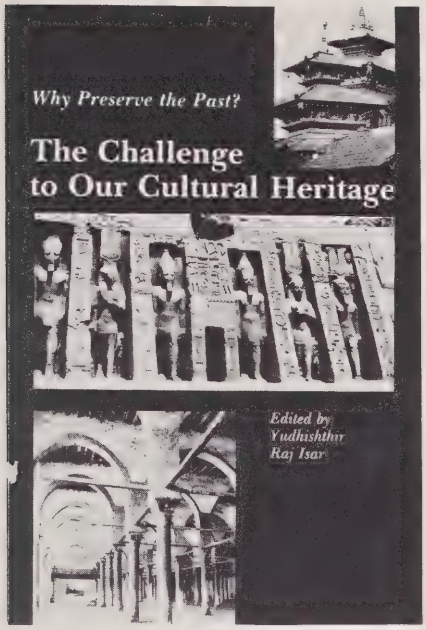
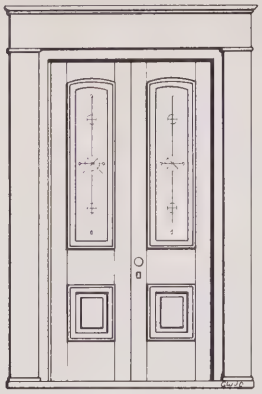


The Challenge to Our Cultural Heritage: Why Preserve the Past?

Yudhishthir Raj Isar, editor
Smithsonian Institution Press
252 pp. $11.95 (paper)

Reviewed by David M. Pendergast, curator in charge, Department of New World Archaeology, ROM

Many whose eyes are on the future, and many more whose livelihoods depend on the incessant change that suffuses modern society, ask the question posed in the title of this book; more often than not, they have the answer firmly fixed in their minds, and it is strongly negative. The challenge to our cultural heritage lies partly in the frequency of this kind of answer, and partly in the ever-increasing onslaught of technology against the environment, cultural as well as natural. This volume, the product of a 1984 conference of thirty specialists and a nearly equal number of North American journalists, is but one of the many attempts by UNESCO and other organizations to take the case for preservation of our past to the public and thereby stem the tide of destruction that now engulfs a very large part of the world.



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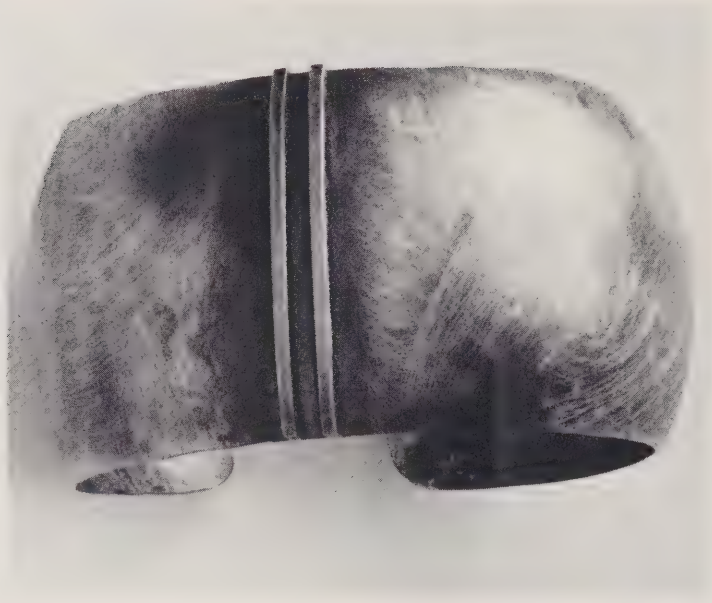

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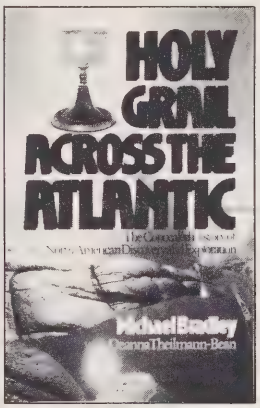

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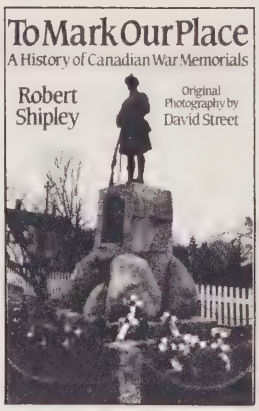

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Robert Shipley; Photography by David Street, Foreword by Pierre Berton
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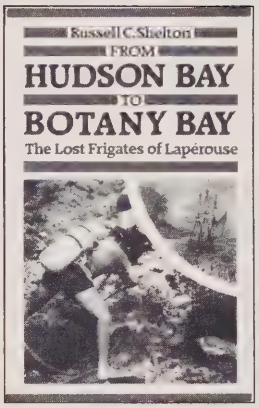

FROM HUDSON BAY TO BOTANY BAY: The Lost Frigates of Laperouse
Russell C. Shelton
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In the first of five sections, the volume poses the most basic question in the minds of preservationists and developers alike: Is there a collision course between preservation and modernization? Three presentations that range from a general overview to a specific examination of the Islamic world effectively demonstrate that the two goals are not antithetical, and indeed can be complementary. Given this realization, the next three sections follow logically; they deal with mobilizing resources, the successes and problems in using science and technology in the service of preservation, and finally a history, ranging widely over both space and time, of the development of ideas and practices in preservation. All of this section, like the preceding two, has relevance to our own national and local interests, but the inclusion of two strong Canadian presentations lends added significance for those whose labours close to home sometimes leave them little opportunity to see their work in a larger context.

For its first two hundred pages, the volume deals with heritage preservation as many, perhaps most, understand it. The values here are countless, especially to the degree that the work opens the eyes of people outside the preservation sphere to the scale and importance of efforts worldwide. For those directly engaged in the fight, the volume will serve much more as a sampler in which virtually every chapter will engender questions. Other works on the topic have dealt only with the saving of monuments, but happily this effort goes further; in its concluding section it attacks what is termed "the scourge of illicit traffic in cultural property."

Given the magnitude of the world trade in antiquities today, no section of twenty-nine pages can hope to do more than skim the surface of the problem. The first of two chapters provides a bit of an overview of world art theft; the second discusses in some detail our own Cultural Property Export and Import Act, its intent and its uses. The section is a

welcome and important presence in the volume, but most readers may not realize how little of the iceberg's tip it raises above the waves. The need for a volume on this subject alone, and indeed for a media-involved conference such as the one that produced this work, is now manifest to all archaeologists, art historians, and others whose work focuses on the material remains of past human endeavour. Perhaps there exists in the present treatise the promise of just such an undertaking, or at least the germ of the idea from which effective public treatment of looting and its consequences could spring.

It is particularly sad that this highly valuable and eminently readable contribution to the battle for our cultural heritage appears shortly after the withdrawal of the United States and Great Britain from UNESCO. That action has shifted the battlefield from sites round the world to desks where what once were plans are now hopes for some distant and ill-defined future. To meet the challenge to our cultural heritage, as this volume shows clearly we are technologically able to do, we must once again define the future. If this is to happen, the world's peoples must provide a resoundingly positive answer to the title's question. Part of the basis for such a response exists in this conference report, but much of it will only come into being if we follow the guideposts and build on the examples presented here, and at the same time redouble our efforts to see the work set on a firm financial foundation before we are left with even fewer fragments of our heritage than we now possess.

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ROTUNDA QUIZ

Answers to the Rotunda Quiz.

1. The dog in "dog days" is a reference to the "dog star" Sirius, the brightest star we can see. Sirius burns brilliant white, low in the southern sky in winter. The ancient Egyptians (and just about everybody since) called it the dog star, and watched for the day on which Sirius rose just before the Sun, because that was a warning of the imminent flooding of the Nile. The summertime association of Sirius with the Sun gave rise to the belief, again in ancient times, that the heat of Sirius added to that of the Sun produced the dog days. And they weren't just hot: the dog days were also supposed to be times of plague, death, and general ill-health. In the *Iliad*, Sirius is described as "the star whose name men call Orion's dog. Brightest of all is he, yet for an evil sign is he set, and bringeth much fever upon hapless men."

2. The explosion of the volcano called Mt Tambora, in what was then the Dutch East Indies, now Indonesia. It must have been an amazing eruption: twenty-five cubic *miles* of debris were ejected, much of it in the form of fine dust. The legendary Sir Stamford Raffles, who was the British commander in the region, wrote that "on Java, at a distance of three hundred miles, the sky was overcast at noonday with clouds of ashes; showers of ashes covered the houses, the streets and the fields to a depth of several inches . . . ." Mt Tambora was the greatest producer of atmospheric dust since 1600; it dwarfed the much more famous explosion of Krakatoa in 1883. The dust rose into the stratosphere, circulated around the world, and cut down the amount of sunlight reaching the Earth: hence the cold snap. In New England there were killing frosts in June, July, and August. The Canadian wheat crop was practically destroyed, and there was near-starvation in Quebec. In fact, lakes just north of the St Lawrence River, east of Quebec City, were still covered with ice in July. But no one at the time attributed the terrible weather to dust from the volcano, even though Benjamin Franklin had already invoked dust in the air to explain the cold winter of 1783–84, and people crossing the Pacific Ocean in 1816 reported seeing floating islands of volcanic ash.

3. Change the amount of light to which they are exposed. These people are suffering from a newly described condition: seasonal affective disorder (SAD). If those who are depressed in winter are exposed to bright light for a couple of hours daily—and there is still controversy about what time of day is best—they improve dramatically. It may be that the light resets a slow-running biological clock, which is something that these people are known to have. Interestingly, coloured glasses have the same effect, the link being that both the lamp and the glasses increase the amount of red light that the patient sees. For those SAD patients who become agitated and manic in the summer, blue-green glasses seem to help, apparently by eliminating light from the blue end of the spectrum. Why does light of different colours have different effects? No one knows.

4. The clickety-clack was caused by the wheels hitting the gaps left between the rails. Rails were laid in thirty- to forty-foot lengths (approximately nine to twelve metres), and a gap was left between each to allow for expansion in the hot summer sun. On cold days the gap was 5/16 of an inch (approximately eight millimetres), but the expanding rails would close that gap completely if the temperature reached the high twenties Celsius. Today, however, rails are laid in huge lengths of thousands of feet and there are no gaps between them. It isn't that the physics of expansion have changed. Rails now are anchored tightly to each railroad tie so that they can't move longitudinally. Instead they swell: the rail actually becomes thicker, although so slightly that you couldn't notice it without careful measurement.

5. Seventeen and thirteen are prime numbers, i.e., they cannot be divided by any whole number other than one or themselves. This eliminates the possibility that any cicada predator can have a shorter life cycle that consistently hits the cicada years. The seventeen-year cicadas are faced only with the normal selection of summer predators, and they cope with them by the strategy called predator satiation: cicadas might be easy prey, but there are just too many of them to eat in too short a time. This year's group, Brood X, emerged from the soil as soon as the soil temperature reached about eighteen degrees Celsius, moulted into the adult form, mated over the next couple of days, and laid eggs. All those adults were dead within a month, but their eggs are hatched or hatching now, and the newborn cicada nymphs are floating to earth and burrowing underground, where they will spend the next seventeen years.

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